THE IRON TRADE REVIEW

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LESS EXCITEMENT

IN PIG IRON, BUT MARKET IS STRONG.

Scarcity of Crude Steel Causes Embarrassment.—Advances in Track Supplies and Blue Annealed Sheets.

The danger of a runaway market on pig iron is apparently passing. Although buying is still active, it is being done more cautiously and frequently high quotations do not result in orders. Some very high prices are being paid for prompt delivery, especially on southern iron, for which more than $16.00 Birmingham for No. 2 has been paid, but $15.50 Birmingham for the remainder of this year and $15.00 for next year's delivery are about the correct market quotations. Small buyers have been compelled to pay more, but a large interest had no difficulty in placing an order at slightly below $15.00 for southern and at about $18.00 for northern iron, both for next year's delivery. There is undoubtedly a scarcity of iron for prompt shipment. In Philadelphia considerably more than $20.00 has been paid for foundry iron, but it has developed that some producers have more than was estimated and among the noteworthy sales for the past few days was a lot of 10,000 tons of Bessemer at $17.75 valley, for the last quarter, 1906. In New York many sales of foundry grade have been made, but there are indications that the buying during September will not be so heavy. On the whole the pig iron situation may be summed up as being very strong, but more satisfactory than recently on account of the disappearance of excitement.

Crude Steel Very Scarce. The scarcity of crude steel in the central west is becoming very serious. The withdrawal of the Illinois and Inland Steel companies from the market as sellers of billets has caused much anxiety among consumers at Chicago. The Pittsburg district mills are also experiencing much difficulty in meeting their requirements. The operations of sheet and tin plate interests are considerably hampered.

Mills Are Very Busy. Great activity in all finished lines continues. The American Steel & Wire Co. within a month has closed contracts for about 200,000 tons. This company and other interests have all the specifications that their mills can take care of. Advances are announced this week of $2.00 on spikes, $2.00 a ton on track bolts, $1.00 on light rails and $1.00 on blue annealed sheets. Orders for tin plate are numerous for this time of the year, due in part to the anticipated advance in price. Specifications are heavy. New business in structural material has been fairly active, but the orders of the principal producer for August will not equal those of some other months. There is, however, plenty of business in sight. The Harriman lines are in the market for about 25,000 tons of bridge material and other railroads will buy freely. The business in merchant steel, boiler tubes and merchant pipe is in excellent condition.

Speculation In Scrap. The dealers in old material seem to be confident of the prevalence of higher prices this fall, as they are buying freely and advancing quotations. Consumers are not, however, very prominent in the market. In some places, notably in Chicago, railroads are offering large lists for old material, but in Pittsburg they are disposed to await developments.

Coke and Ore Prices. Furnace men are showing much interest in the probable cost of coke and iron ore for next year. Considerable contracting for coke for next year has been done, but producers are slow to enter into such contracts. The production has increased. Ore sellers are firm in declining to make quotations for next year. They say that, owing to the fact that the mines have been worked to their limit this year and last, it is impossible to estimate production with any approach to accuracy until after the close of navigation. Hence they do not expect to make quotations on ore until that time.

NEW OPEN-HEARTH PLANT AND ROLLING MILL ON STATEN ISLAND.

The new open-hearth steel plant and rolling mill, of Milliken Brothers, Inc., located on Staten Island, N. Y., is now nearing completion and will start up during the month of October. This company is now taking orders for the supply of billets and slabs, and the capacity of this plant will undoubtedly relieve, to a considerable extent, the difficulty that eastern manufacturers have had in obtaining this class of material.

The company will be prepared to turn out structural material consisting of beams, channels, angles and zees about one month after it starts on billets and slabs.

The works are equipped with the very latest and most improved machinery of every kind, and it is one of the few plants in the United States that has been built new from the ground up without any reference to any old or existing plants. The capacity of the plant will be about 12,500 tons per month.

MACHINERY MEN TO MEET.

A special meeting of the National Supply and Machinery Dealers' Association has been called for Detroit, Mich., Sept. 26 and the days following. The executive committee of the association will meet Monday and Tuesday preceding the general meeting.

"While this call is general," says President Strong, "and all members of the association are invited to be present, the call comes entirely from members dealing either exclusively in machinery or machinery and supplies. The various supply committees have not made any suggestions as to a meeting. If a sufficient number of supply dealers are present there will undoubtedly something of interest be brought forward, but as at present advised indications are that the meeting will be very largely devoted to the interests of the machinery dealers."

THE WEEK IN IRON CENTERS.

PITTSBURG.

Excitement Decreased and Buyers are More Deliberate.

Office of THE IRON TRADE REVIEW, 521 PARK BUILDING, Aug. 28

While, as a general proposition, market conditions remain about as they were last week, considerable of the frothy element that has been noticeable in the pig iron market for the past month is absent and much of the excitement that has been the feature has worn away and buyers are going at it with more deliberation.

The past week has been interesting in view of the previous statements of furnace interests that there was practically no pig iron to be had for the last quarter of this year, but despite these assertions considerable pig iron has been shaken loose by the attractive prices offered by hard pressed consumers and several sales of both foundry and steel-making pig iron have been made.

The most surprising condition to come out, in face of the heavy inquiries and large sales for deliveries during the first half of next year, are the reported sales of 10,000 tons of Bessemer for last quarter delivery to the Republic Iron & Steel Co., on the basis of $17.75, valley, freight being equalized, another sale of 10,000 to an independent interest for second quarter of next year delivery at the same price from a valley furnace, and two 1,500-ton sales for third quarter delivery at $18. With the exception of the Republic Iron & Steel Co. purchase, sales were made by the Valley association. At the same time W. P. Snyder reports the sale of 8,000 tons of Bessemer at $18.50 to $18.75 and a like amount of basic for delivery from September to July at $18.25, valley furnaces.

Steel bars and plates are the leading features in finished lines, the demand for deliveries on each being unusually heavy, the steel car companies, lake ship yards, and bridge companies being the leading consumers of plates although heavy specifications have been received from makers of riveted pipe.

In structural shapes and plates the mills are pretty well filled up and in some instances the demand for deliveries has become so great that deliveries are being pro-rated in order to give all consumers a little of the material.

Pig Iron.—There can be no doubt that a scarcity of pig iron exists, but developments of the past week have shown that the supply of prompt iron is better than furnace interests were willing to admit at the beginning of the present upward march of prices. From directions in which it had been reported there was absolutely no iron to be had, the ruling attractive prices have secured several lots of fair but not large tonnages, although the aggregate has been considerable. The Westinghouse Electric, on its inquiry for 16,000 tons of northern foundry iron, bought at prices ranging from $17.75 to $18.25, valley, for first half delivery at Allegheny. A sale of 10,000 tons of Bessemer on the basis of $17.75, valley, Youngstown delivery, freight being equalized is reported for last quarter delivery and another 10,000-ton sale of Bessemer for second quarter of next year was made at $17.75. For third quarter of this year 3,000 was sold at $18 valley by the association and W. P. Snyder & Co. report 8,000 tons of Bessemer at $18.50 to $18.75 and 8,000 tons of basic at $18.25, both for deliveries September to July. The sale of 135,000 reported last week for first half delivery was not at a flat price, but was a continuation of an old contract calling for monthly adjustments. Northern No. 2 foundry iron has sold as high as $18.85, valley for prompt shipment, but the market for forward deliveries is between $18 and $18.50. Southern No. 2 is quoted at $16 Birmingham for spot iron and several sales have been made at that price, although it is probable that $15.75 could be done on a desirable tonnage. We quote:

Bessemer Valley	18.00 to 18.50
Bessemer, Pittsburg	18.85 to 19.35
No. 1 Foundry, Pittsburg	19.60 to 19.85
No. 2 Foundry, Pittsburg	19.10 to 19.35
Gray Forge, Pittsburg	17.85 to 18.10
Basic, Valley	18.00 to 18.25
Basic, Pittsburg	18.85 to 19.10

Steel.—With the increasing demand for finished material and the heavy specifications against contracts for this material, the one drawback is the scarcity of semi-finished material. There is a very marked scarcity of billets and sheet bars, in fact, two of the leading producers are practically out of the market for the remainder of the year, the pressure upon their own finishing mills being so great that they have experienced trouble in filling outside contracts. Sheet and tin plate interests, outside of the corporation are in a predicament over their supply and to keep in operation and meet obligations have been paying prices for semi-finished material which will scarcely see them clear. The leading sheet and tin plate interest is operating all mills for which it can secure steel, if only for a few days at a time. Independent consumers have accepted the advance to $30 on sheet bars. On billets, while a nominal market of $28 is quoted, as high as $30 has been paid.

Ferro-Manganese.—For spot delivery ferro-manganese, foreign 80 per cent is quoted at $90 and for September delivery $87.50. For delivery over the remainder of the year $85 is quoted. Ferro-silicon, 50 per cent, for September delivery is quoted $97 and for remainder of the year $86. Twelve per cent ferro-silicon is quoted at $31.

Skelp.—With the moderate inquiry now in the market we quote nominally as follows on light gauges and narrow widths:

Bessemer, grooved, 1.62½c to 1.67½c; sheared, 1.67½c to 1.72½c; basic, grooved, 1.65c to 1.70c; sheared, 1.70c to 1.75c; iron skelp, grooved, 1.80c to 1.85c; sheared, 1.90c to 2c.

Muck Bar.—On all pig metal muck bar we quote a nominal market of $31 to $31.50, Pittsburg.

Hoops and Bands.—There has not been a great amount of new business placed during the week, but specifications against old contracts are good and not much new business is expected for a month or six weeks, as many of the old contracts run well into the fall. There has been some little price shading, but it has not been of any consequence and we continue to quote:

Hoops, 1.90c in carload lots, and 2c on less than carload lots, bands, 1.50c base, half extras as per standard steel card. Prices f. o. b. Pittsburg.

Cotton Ties.—Deliveries have been far ahead of last year and with the bumper crops reported from the south considerable business is expected during September. The September price will be 87½c Pittsburg, per bundle.

Rails and Track Material.—The inquiry, while it has been fair on standard sections and good on light sections, has not been so heavy on the former as it was a few weeks ago on account of the announcement by the leading interest that it was sold up to capacity on deliveries for the remainder of the present year. The total sales of standard sections for the week under review have not been over 15,000 tons. The sales of light rails have been heavy at the advance noted last week. We quote.

Fifty pounds and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails, 16 pounds, $31; 20 pounds, $32; 25 to 45 pounds, $30 to $31; angle bars for standard sections, 1.50c; spikes, $2.25 to $2.30.

Sheets.—There has been a heavy new business, with plenty more in sight and specifications are of immense volume. The price of blue annealed has been advanced $1. The

leading interest, with which August has been better than July, which was almost a record month, is operating all mills for which it can secure steel, if only for a few days at a time. Consumers are appreciating that they are up against pretty stiff mill conditions on account of the scarcity of semi-finished material and are specifying as far ahead as their contracts run and an inclination has been shown in several instances to contract for next year as far as March. We quote:

Black steel sheets, box annealed, cold rolled, one pass: Nos. 11-12, 2.10c; Nos. 13-14, 2.15c; Nos. 15-16, 2.20c; Nos. 17-21, 2.25c; Nos. 22-24, 2.30c; Nos. 25-26, 2.35c; No. 27, 2.40c; No. 28, 2.50c; No. 29, 2.65c; No. 30, 2.75c. Galvanized, Nos. 10-11, 2.45c; Nos. 12-14, 2.55c; Nos. 15-16, 2.65c; Nos. 17-21, 2.80c; Nos. 22-24, 2.95c; Nos. 25-26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.80c; No. 30, 4.05c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation; $3.10 per square for No. 28 galvanized, 2½-inch corrugation. Quotations f. o. b. Pittsburg on large lots.

Tin Plate.—The anticipated advance in price undoubtedly has had considerable to do with the heavy business being placed at this time, and many of the canning interests are coming back a second time to cover for their requirements. The specifications are very heavy and there has been considerable early 1907 business done, although, as a rule, this does not appear before October or November. We continue to quote as follows, subject to the usual discount:

$3.75 per base box, f. o. b. Pittsburg, 14 x 20 100-pound cokes, terms 30 days, less two per cent off for cash in ten days.

Plates.—The demand for plates by the bridge companies, riveted pipe makers, car builders and lake ship yards has been unusually heavy and it has arrived at that stage where mills are in many cases pro-rating the tonnage and cutting schedules in order to fill immediate requirements. There has been no change in prices and there has been no inclination manifested by the large interests to do so at this time. We quote:

Tank plate ¼ inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill, Pittsburg. Light plate schedule, No. 10, 1.70c; Nos. 11-12, 1.75c; Nos. 13-14, 1.80c; Nos. 15-16, 1.90c. Extras on the regular plate schedule are as follows per 100 pounds, boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates, varying not more than four inches, in width at ends, narrowest end not being less than 30 inches, 0.10c; complete circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c. Gauges under ¼ inch to and including 3-16 inch plates on thin edges, 0.10c; under 3-16 inch to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Structural Material. — Specifications and shipments are running about even and the mills are neither gaining nor losing on their delivery times. There are no promises being made on quick order business, and the volume of business is not so great but that six weeks will permit the mills to get around fairly well on the range of rollings. The construction companies are taking on a nice volume of new business and, while none of it is particularly large, the aggregate tonnage is good and shops are running practically to capacity. We quote:

Beams and channels, 15 in., and under, 1.70c; over 15 in., 1.80c; zees, 1.70c; tees, 1.75c; angles from three to six inches, inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

Wire and Wire Nails.—This season has been very much out of the ordinary in that business has kept up throughout the summer; there has been no drop in pieces during July and August, and business is now past the turn looking toward an advance, which will probably be announced about Sept. 1. Jobbers and consumers are both placing orders with the mills for the next sixty days. We continue to quote as follows:

Wire nails, jobbers' carload lots, $1.85; retailers' carload lots, $1.90, and less than carload lots, $2; painted barb wire, $2 for jobbers in carloads; retailers in carloads, $2.05, and less than carloads, $2.15, with 30c for galvanizing; plain wire, $1.70 to jobbers and $1.75 by carload.

Steel Bars.—The specifications being received at the mills are ahead of capacity to deliver, not that any of the individual strictly new business is so extremely heavy, but the contracting has been general, and the specifications against old contracts are for urgent delivery, and in some instances new business is subject to mill confirmation. The leading interest has not advanced its price, but several independent interests are quoting $1 to $2 above the 1.50c base. We quote:

Cold rolled and ground shafting, 50 per cent off in carload lots, and 45 off in less than carloads, delivered in base territory; tire steel, 1.70c to 1.80c; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flat, 1.50c to 1.55c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.05c to 2.10c. The price of planished and machine straightened tire is 1.70c base half extras as below. Iron finished tire up to 1½ inch by ½ inch, 1.65c base half extra tire list. Iron finished tire 1½ inch by ½ inch and over to be sold on regular bar basis of 1.50c base; half extra steel card.

Merchant Pipe.—The merchant pipe business is in better shape now than it has been for many months. There are no particularly large inquiries out for merchant sizes or line pipe, but the aggregate tonnage is very heavy. Prices remain unchanged, the extreme discount to the large trade being 81 per cent and 5 off. We quote the following official discounts, consumers' carloads, with jobbers' carloads one point higher:

	Steel		Iron	
Consumer's Carloads	Black	Galv.	Black	Galv
⅛ and ¼ inch	71	55	67½	51½
⅜ inch	73	59	69½	55½
½ inch	75	63	71½	59½
¾ to 6 inches	79	69	76	66
7 to 12 inches	74	59	71	55½
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch	64	52	60½	48½
½ to 4 inches	71	59	67½	56½
4½ to 8 inches	67	55	63¼	51½
Double extra strong plain ends, ⅛ to 8 inches	60	49	56½	45½

Boiler Tubes.—The steady and brisk business in boiler tubes continues in good volume, the demand for locomotive boiler tubes being very strong. We quote:

	Steel	Iron
1 to 1¼ inches	50	45
1¼ to 2¼ inches	62	45
2½ inches	64	50
2¾ to 5 inches	70	57
6 to 13 inches	62	45

Less than carload lots two points less.
2½ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Merchant Bars.—During the past week there has been considerable bar iron business done, one producer selling between 6,000 and 8,000 tons at the 1.60c price, although on another lot this price has been shaded $1 per ton. We quote as follows.

Common iron bars, 1.60c, Pittsburg, in carload lots, 1.65c in less than carloads; Bessemer steel bars, 1.50c; plow and cultivator, 1.50c net; channels, angles, zees and tees, under three inches, 1.60c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds, of a size, 0.30c advance.

Old Material.—Dealers are holding

for high prices and there have been but very few transactions of large tonnages. A scarcity of scrap of practically all grades is being experienced and the railroads, appreciating the situation, are holding their lists for the top. Consumers are not buying very freely, and several of the dealers are endeavoring to buy to place on contracts already made, rather than take the material from their stocks. We quote: Heavy melting stock, $16.75 to $17; No. 1 cast scrap, $16 to $16.50; cast borings, $9.50 to $10; bundled sheet scrap, $14 to $14.50; malleable scrap, $16 to $16.50; railroad wrought scrap, $17; low phosphorus scrap, $19 to $19.50; wrought turnings, $12.25 to $12.50; busheling scrap, $14.-50 to $16; iron axles, $26.50 to $27; old rails, rerollers, $17.25 to $17.50.

Coke.—The inquiry for both foundry and furnace coke is good, and several consumers are already figuring on contracts for next year. There has been a greater production in the region during the past two or three weeks on account of better labor conditions, the scarcity of labor experienced throughout the summer months having been overcome. The estimated production for the week ending August 18 was 278,220 tons, and for the lower Connellsville region, 107,-854 tons. A large number of new ovens are being blown in. On foundry coke we quote $3.40 to $3.50 for spot shipment and $3.25 to $3.40 for extended deliveries. On furnace coke we quote $2.80 to $2.90.

CHICAGO.

Crude Steel Very Scarce.—Pig Iron Strong and Prices of Spot Higher.

Office of THE IRON TRADE REVIEW, 1 62 Monadnock Block, Aug. 28

The steel shortage in the central west grows more ominous. Mills are deluged with specifications for finished material, but crude steel cannot be made nor bought to keep pace with the consumptive requirements of this section. By the withdrawal from the market on billets of the Illinois and Inland Steel companies, the situation here has become very acute. The Tennessee-Republic interests withdrew on sheet bars some weeks ago, and have since retired on steel bars. Deliveries of all materials are falling further behind and prices are slowly climbing higher. Mills with billet contracts are beginning to see the necessity of conserving their supply of this product, and at least one producer has notified its customers that the contracts made with it may be canceled any day. The American Steel & Wire Co. has closed contracts since the first of August for upwards of 200,000 tons, while another mill has specifications in hand for an aggregate of 400,000 tons. These figures give an idea of the enormous tonnage of material in demand, and seem the larger because the wire company is buying rods in the open market to keep its plants operating to capacity and because the other concern has a daily output of only 4,500 tons. Advances are announced this week of $2 a ton in spikes, $2 a ton in track bolts, and $1 in light rails and $1 on blue annealed sheets. The prospects of an advance in steel bars are more favorable, although it is understood the steel corporation is not in favor of any change. New tonnage in structural shapes and plates is active, one local maker having closed 25,000 tons of the former in the week under review. On plates, the Illinois Steel Co. is sold up for practically the whole of 1907. Pig iron continues strong and some large inquiries are in evidence this week. Spot iron is quotably higher, which is the only change in values.

Old material has bounded upward, being from $1 to $1.50 a ton higher than a week ago. There is a better demand than formerly, open-hearth steel makers being liberal inquirers.

Pig Iron.—New bookings continue unusually brisk. Most of it is for spot shipment, though several round lots are included in the week's transactions. Several inquiries are pending for 1,000 to 1,500 tons each, included, among them being one from the Pullman Co. for 1,500 tons and one from James B. Clowe's Sons for 1,000 tons. Deliveries are still very slow and the operations of western foundrymen are greatly hampered. The scarcity of cars in both northern and southern districts has added to the complications created by the dearth of labor in the south, and even spot iron is becoming scarce. Appearances indicate that for an indefinite period foundrymen will be kept on the anxious seat regarding the completion of their contracts, for southern furnaces can offer no assurance when deliveries will improve. In the meantime, spot iron is reaching higher levels. One local commission house paid $16, Birmingham, for 1,000 tons of No. 2 foundry, and is holding same at $16.50. Several sales have been made at $16.25 and $16.50, the melters, figuratively speaking, jumping at the chance to get the material at these prices. All deliveries this year are now included in the term "immediate shipment" and command the top price of the market.

For shipment in 1907, $15 to $15.25 Birmingham, is the spread generally quoted for No. 2. Virginia furnaces have nothing to offer for this year's delivery, and are asking $17.50 furnace, or $20.35 Chicago, for deliveries in 1907. Northern irons are without noticeable change. Local furnaces can give better deliveries than southern stacks, and are booking most of the current business. All grades are in active demand with prices very strong. We quote, as follows.

Lake Superior charcoal	$19.50 to 20.00
Northern Foundry No. 1	20.00 to 20.50
Northern Foundry No. 2	19.50 to 20.00
Northern Foundry No. 3	19.00 to 19.50
Northern Scotch Foundry	20.00 to 20.50
Ohio Strong Softeners No. 1	19.80 to 20.30
Ohio Strong Softeners No. 2	19.30 to 19.80
Southern Foundry No. 1	19.40 to 19.90
Southern Foundry No. 2	18.90 to 19.40
Southern Foundry No. 3	18.40 to 18.90
Southern Foundry No. 4	17.90 to 18.40
Southern No. 1 Soft	19.40 to 19.90
Southern No. 2 Soft	18.90 to 19.40
Southern Gray Forge	16.65 to 17.15
Southern Mottled	16.40 to 16.90
Southern Silveries (4 percent to 6 percent Silicon)	18.40 to 18.90
Jackson Co. Silveries, 8 to 10 percent Silicon	24.30
Alabama and Georgia Car Wheel	25.65 to 26.15
Malleable Bessemer	19.50 to 20.00
Standard Bessemer	20.55
Basic Iron	19.85 to 20.05

Billets and Rods.—Extreme strength characterizes all forms of crude steel. The largest makers of the west are notoriously short and are meeting their obligations with considerable difficulty. Following the action of the Illinois Steel Co., and Tennessee Coal, Iron & Railroad Co., the Inland Steel Co. has withdrawn from the market on billets, having sold its output for the greater part of the first half of 1907. The American Steel & Wire Co. is still taking orders for rods, though for its immediate requirements, it has had on several occasions to buy from other producers. Sheet bars have advanced to the minimum of $30 Pittsburg; rods are selling at $33 to $34 Pittsburg, and forging billets at $36 Chicago.

Iron and Steel Bars.—The pressure for steel bars has become so great that nearly all the branch offices of eastern mills have instructions to submit all inquiries to the home office before quoting. The question of deliveries has become a most troublesome one with every maker. Crowded as all the mills are with orders, and being overwhelmed with specifications from frantic consumers, it has become compulsory owing to the shortage of steel to pro rate the output. The Cambria Steel Co., by advancing its price $1 a ton practically forced itself out of the market, a step which added to the nervousness of consumers. The Tennessee company has now withdrawn from the market. Early shipments command premiums, and if the expected advance is not announced by the association, it is more

than likely that a system of premium-paying will be started. The corporation is heavily oversold, and because of the shortage of steel its undelivered tonnage is rapidly increasing. Bar iron is unchanged, local prices ranging from 1.66½c to 1.76½c Chicago. Specifications continue very heavy, but new tonnage is not in proportion. All the mills are comfortably filled ahead, and seem none too anxious to add to their obligations. We quote mill prices Chicago delivery as follows: Soft steel bars and bands, 1.66½c, half extras; soft steel angles, less than 3 x 3, 1.76½c; hoops, 2.06½c base, full extras; old rail stock, 1.65½c. We quote bar iron from stock, 2.20c, full extras; soft steel rounds and squares, 3 inches and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by 1⅛ inch and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by 1⅛ inch and larger, $2 per 100 pounds base; flats, 4½ inches x 5 inches and 6 inches x 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands, $1.85 to $1.95 half extras; soft steel hoops, $2.30 to $2.40 full extras. Other sizes not mentioned above, $1.85 per 100 pounds base, plus half extras.

Sheets.—In the expectation of higher prices, demand for sheets has greatly increased. The price of blue annealed (No. 16 and heavier) has advanced $1 per ton. Specifications are heavy and supplementary orders are not uncommon. So confident is the belief that the market will not decline for another year, that many consumers have ordered their entire requirements for 1907. Never before in the history of the trade has there been so large a tonnage on mill books as at the present time, and not in years have prices been so high or so uniformly maintained. The shortage of crude steel daily grows more pronounced, with a corresponding increase of complications in the delivery problem. The best that can be done on either black or galvanized sheets is three months. We quote mill prices, base sizes, as follows: Black sheets, Nos. 8, 9 and 10 1.85c Pittsburg; No. 28 gauge, 2.50c Pittsburg. Galvanized sheets, No. 28 gauge, 3.55c to 3.60c Pittsburg. Freight to Chicago is 16½c per 100 lbs.

Jobbers' prices on less than carload lots, from local store, are as follows: Black sheets, No. 10, 2.30c; No. 12, 2.35c; No. 14, 2.40c; No. 16, 2.50c; Nos. 18 and 20, 2.70c; Nos. 22 and 24, 2.75c; No. 26, 2.80c; No. 27, 2.85c; No. 28, 2.90c; No. 30, 3.35c. Galvanized sheets, Nos. 10 to 20, 3.15c to 3.25c; Nos. 22 and 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 3.95c; No. 30, 5.10c to 5.15c.

Plates.—An excellent business is reported in plates. The South Chicago mill is sold up for practically the whole of next year on the sheared product, and is not adding much additional tonnage to its present obligations. Early delivery of either sheared or universal plates, however, can be obtained from other makers, and the market is not suffering to any extent. Prices are strong, mill shipments being quoted as follows: Tank steel, ¼ inch and heavier, up to 100 inches wide, 1.60c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago is 16½c per 100 lbs.

Jobbers' prices for shipment from local stocks are as follows: Tank steel ¼ inch and heavier, up to 72 inches wide, 2c to 2.10c; 72 inches up to 96 inches wide, 2.10c to 2.20c; 3-16 inch up to and including 60 inches wide, 2.10c to 2.20c; 3-16 inch, 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.15c to 2.25c; flange steel, 25c extra; heads, 25c extra.

Structural Steel.—New orders taken by the local mill last week aggregating 25,000 tons, was made up entirely of odd lots, large orders being conspicuous by their absence. Early shipments are hard to obtain, which accounts in a measure for the few large undertakings under negotiation. The inquiry for 5,200 tons of fabricated bridge material from a western railroad mentioned last week, has not been closed. Another railroad in the west is figuring on the steel for three large bridges, and the Commonwealth Electric Co., of this city, has plans under way for an addition to its plant involving about 1,500 tons of shapes. These are the only large contracts pending in this city. We quote mill prices, as follows: Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg; freight rate to Chicago is 16½c per 100 lbs. See Pittsburg report for extras.

Quotations on lots from store are as follows: All angles three inches and larger, including six inches, $2.25 per 100 pounds base; angles over six inches, $2.35 per 100 pounds base; tees, three inches and larger, $2.30 per 100 pounds base; beams, three inches to fifteen inches, inclusive, $2.25 per 100 pounds base; beams, eighteen inches and larger, $2.35 per 100 pounds base; channels, three inches and larger, $2.25 per 100 pounds base.

Rails and Track Supplies.—An advance of $2 a ton in railroad spikes will be made by the Illinois Steel Co. Sept. 1, placing that product at 2.10c to 2.20c for next year's delivery. Another maker is asking 2.45c Chicago for this product or 2.35c at its East St. Louis plant. The highest price heretofore asked by the Illinois Steel Co. for spikes, was 2.25c to 2.30c f. o. b. Joliet, which was obtained on orders for quick delivery; the major portion of the immense tonnage taken for 1907 shipment was closed on the basis of 1.90c f. o. b. mill. Track bolts have also advanced, 3c to 3.50c, being easily obtained for quick shipment, and 2.45c to 2.55c for forward deliveries. Light rails are higher by $1 a ton. There is little new tonnage for either standard or light sections, consumers bending their efforts toward getting material already ordered. We quote standard sections f. o. b. mill, Bessemer, $28 and open-hearth $29; light rails, Bessemer steel, 30 to 45-pound sections, $29 to $39; 25-lb., $30 to $31; 20-lb., $31 to $32; 16-lb., $32 to $33; 12-lb. $33 to $34, and lighter sections, down to 8-lb., $39.50 to $51.50, all f. o. b. mill.

Merchant Steel.—There is no cessation in the flow of specifications for special agricultural material. Mills are overwhelmed with requests for early shipments. Everybody apparently is short. New tonnage is light owing to the absence from the market of leading producers. Prices are without change, mill shipments, Chicago delivery, being quoted as follows:

Planished or smooth finished tire steel, 1.86½c; iron finish, up to 1½ x ½ inch, 1.81½c; iron finish, 1½ x 1½ inch and larger, 1.66½c, base; channels for solid rubber tires, ¾ to 1 inch, 2.16½c, and 1⅛ inch and larger, 2.06½c; smooth finished machinery steel, 1.91½c; flat sleigh shoe, 1.71½c; concave and convex sleigh shoe, 1.96½c; cutter shoe, 2.35c; toe calk steel, 2.21½c; railway spring, 1.86½c; crucible tool steel, 6½c to 8c, and still higher prices are asked on special grades. Shafting, 50 per cent off in car lots and 45 per cent in less than car lots, in base territory.

Wire Products.—An idea of the enormous consumption of wire materials may be gathered from the fact that the leading maker has closed orders since the first of the month aggregating 200,000 tons. The demand is simply overwhelming, and it will be months before the order books can be cleared. The shortage of crude steel grows daily, but will be more keenly felt towards the end of the year. The only change in prices is that all special quotations to jobbers have been withdrawn. The market is extremely firm at the following schedule, which is based on Chicago deliveries.

Wire nails, $2; painted barbed wire, $2.15; galvanized barbed wire, $2.45; smooth annealed wire, $1.85; smooth galvanized wire, $2.15; polished staples, $2.15; galvanized staples, $2.40. Carload lots to retailers, 5 cents higher than above prices; less than carload lots, 15 cents higher.

Boiler Tubes.—The market is without apparent change. New tonnage is exceedingly brisk and prices are uniformly maintained. We quote on the base sizes 2¾ to 5 inches, steel, 68.35; iron, 55.35, and seamless, 50.85.

Less than carload lots, from store, are as follows:

	Steel	Iron	Seamless Steel
1 to 1¼ inches inclusive....	40	25	42½
1¼ to 2¼ inches, inclusive..	50	35	35
2¼ inches, inclusive.....	52½	35	30
2¾ to 5 inches, inclusive...	60	47½	42½

Merchant Pipe.—Specifications for pipe are active. Jobbers are stocking up for the fall trade, and while the present low prices last are contracting freely for future requirements. We quote on the base sizes, ¾ to 6-inch black steel pipe, 79.35 per cent discount, and 69.35 Chicago for galvanized. Quotations on material from stock remain at 76 to 77 per cent on the base sizes.

Cast Iron Pipe.—New business in the week under review was light. Specifications, however, show no signs of falling off. Leading manufacturers are comfortably filled ahead, at least one concern having its output taken for practically nine months ahead. We quote for Chicago delivery, as follows: Four-inch waterpipe, $33; 6, 8, 10 and 12-inch pipe, $32; larger sizes, $31; gas pipe, $1 extra.

Coke.—Coke consumers in the west are placing liberal contracts for deliveries running into 1907. At least one manufacturer has sold the bulk of its output for next year, securing for same prices ranging from $5.25 to $5.75 Chicago. The market is extremely firm, Connellsville 72-hour brands being quoted from $3 to $3.15 at the ovens, or $5.65 to $5.80 Chicago. Solvay coke is selling on the same basis. Virginia grades are offered at $2.75 to $3 ovens.

Old Material.—The speculative actions of local dealers has within the past week pushed up prices at least $1 a ton. The tendency is still upward, a condition which the railroads are not slow to take advantage of. Lists are now on the market from the C. M. St. P. & O., Burlington, Rock Island and Illinois Central, aggregating 8,000 tons, and the active bidding for this material leaves no doubt that it will all be bought at stiff prices. Quite a number of merchants are sold short, and their anxiety to complete these contracts accounts in part for the rapid increase in values. Some large local melters are figuring on round lots of scrap, including the Inland Steel Co., which is setting prices on several thousand tons. We have again revised our prices, and quote as follows, gross tons being given in the first paragraph:

Old Steel Rails (4 feet and over)	$17.00 to 17.50
Old Steel Rails (less than 4 feet)	15.50 to 16.00
Old Car Wheels	19.50 to 20.00
Old Iron Rails	22.00 to 22.50
Relaying Rails, subject to inspection	28.00 to 30.00
Heavy Melting Steel	16.00 to 16.50
Mixed Country Steel	13.50 to 14.00

We quote net tons, as follows:

No. 1 R. R. Wrought	$17.00 to 17.50
No. 2 R. R. Wrought	15.50 to 16.00
Shafting	17.00 to 17.50
Dealers' Forge No. 1	13.00 to 13.50
Wrought Pipe and Flues	11.00 to 11.50
No. 1 Cast, 150 pounds and less	15.00 to 15.50
No. 1 Mill	10.00 to 10.50
Mixed Busheling (No. 1 & No. 2)	11.00 to 11.50
Country Sheet	8.00 to 8.50
No. 1 Boilers Cut	10.00 to 10.50
Boiler Punchings	12.00 to 12.50
Iron Car Axles	24.00 to 24.50
Steel Car Axles	20.00 to 20.50
Iron Axle Turnings	10.00 to 10.50
Cast Borings	8.50 to 9.00
Mixed Borings, etc.	8.50 to 9.00
Machine Shop Turnings	9.50 to 10.00
Railroad Malleable	14.50 to 15.00
Agricultural Malleable	14.00 to 14.50
Stove Plate and Light Cast Scrap	12.75 to 13.25
Old Iron Splice Bars	18.50 to 19.00

A meeting of the material men holding contracts on the new furnaces of the Republic Iron & Steel Co. was held at Youngstown last Saturday. T. R. Bray, who succeeds Charles Hart as vice president and becomes head of the operating department, is desirous of getting the two big smelters working at the earliest date.

CLEVELAND.

Ore Men Firm in Not Naming Prices. —Heavy Selling of Foundry Iron.

Office of THE IRON TRADE REVIEW, BROWNING BUILDING, Aug. 28.

Iron Ore.—Mining interests seem determined to resist all attempts of furnacemen to open the ore-buying season at an unprecedentedly early date and insist that the movement of the present season must be well out of the way before they will consider sales for 1907. Their mines have been driven to capacity all last season and this and no adequate idea of what next year's output will be, is possible, they declare, without a careful investigation of conditions at the close of navigation. The inevitable car shortage of the late summer has developed and the movement of ore from lower lake docks is disappointing in the light of what it was hoped could be handled. Already there are predictions of extreme ore scarcity before the opening of navigation, as with a much heavier consumption than last year the tonnage brought down will not be greatly in excess of the 1905 movement.

Pig Iron.—Continued heavy selling of foundry iron for first and second quarters of 1907 has proved the feature of the week in the local market. The Cleveland part of the Westinghouse requirements was divided among a number of interests. Some southern iron included in the purchase is understood to have been closed at $19.10, delivered, with the northern iron commanding a relatively higher price. Certain local interests have held off, refusing to sell ahead of the first of the year, and others have booked a considerable tonnage and retired. Inquiry continues very heavy. Occasionally a small lot of quick delivery iron is found to meet the needs of a favored purchaser, who willingly pays about $20.00 delivered. No recent Bessemer sales are reported. Basic is being held at $18.25 for first half delivery and it is understood that some large deals are pending. Malleable is exceedingly strong, with consumers freely offering $19.00 valley and securing little. We quote, Cleveland delivery, as follows:

Bessemer	$18.65 to 18.85
No. 1 Foundry	18.75 to 19.00
No. 2 Foundry	18.50 to 18.75
No. 3 Foundry	17.75 to 18.25
No. 2 Southern	18.60 to 18.85
Gray Forge	17.00 to 17.50
Gray Forge, Southern	16.00 to 16.50
Lake Superior charcoal	19.50 to 20.00

Coke.—Producers still decline to quote for delivery ahead of the first of the year, declaring that it is yet too early, and furnacemen are on the anxious seat as to the 1907 cost of this part of their raw material. Cars are not nearly as plentiful in the Connellsville region as present conditions demand and much trouble is anticipated in this direction with the advent of cold weather. Foundry coke is quoted at $3.75 ovens with furnace coke scarce in the neighborhood of $3.00.

Finished Materials.—The leading interest has advanced blue annealed sheets $1 per ton, making the Cleveland price for Nos. 8, 9 and 10, 1.85c. The old range of prices was considered low and the advance will be accepted without protest. Steel bar business at the recently advanced quotation has been very brisk and one large interest is declining new business. All lines of crude and semi-finished steel are increasingly strong, so much so that prompt delivery forging billets are now bringing $35 to $36, Cleveland. The sheet bar situation has become so desperate that one Ohio interest is inquiring for 4 x 4 rerolling billets as a substitute. Structurals and plates are in strong demand and other lines are unchanged.

Old Material.—Activity is increasing in the scrap market and prices are advancing sharply, for the most part as a result of brisk trading among dealers. Mills are buying moderately, seemingly not being reconciled as yet to the higher quotations prevailing, but the opening of an active buying season is expected in

the very near future. We quote as follows, Cleveland delivery, gross tons in the first paragraph:

Old iron rails	$23.50 to 24.50
Old steel rails (over 6 feet)	17.50 to 18.50
Old steel rails (under 6 feet)	17.00 to 17.50
Old car wheels	17.50 to 18.00
Steel boiler plate	15.00 to 15.50
Steel axles	20.00 to 21.00
Malleable iron (railroad)	16.50 to 17.00
Malleable iron (agricultural)	14.00 to 14.50
Heavy steel	16.50 to 17.00
Country mixed steel	14.50 to 15.00

We quote net tons as follows:

No. 1 R. R. wrought	$16.50 to 17.00
No. 1 busheling	14.00 to 14.50
No. 1 machine cast	14.50 to 15.00
Iron axles	23.50 to 24.50
Axle turnings	11.00 to 11.50
Wrought turnings (free from cast)	10.00 to 10.50
Grate bars	11.50 to 12.00
Pipes and flues	14.00 to 14.50
Tank iron	12.00 to 12.50
Hoop and band iron	8.50 to 9.00
Sheet iron	7.50 to 8.00
Wrought drillings	10.00 to 10.50
Stove plate	11.00 to 11.50
Cast borings	7.50 to 8.00

CINCINNATI.

Extreme Prices Do not Take Business, but Demand is Very Strong.

August 28.

Pig Iron.—The market continues firm with prices showing an upward trend. There is considerable inquiry and the business of the week has been active. A manufacturer in northern Ohio bought close to 20,000 tons, mostly northern iron for first half of next year delivery on the basis of $17.75 to $18.00 for the northern iron and at something under $15.00 Birmingham for the southern. A large Pittsburg interest took about 18,000 tons for next year delivery, mostly northern iron which sold at close to $18.00 for the northern and at $15.00 Birmingham for the southern. A stove maker bought some iron for this year's delivery and paid $15.00 and $15.50 Birmingham for southern iron. In the Hanging Rock district a lot of 5,000 tons was sold for delivery next year at $17.75 at furnace.

The general market is quite irregular. Some of the extreme prices asked under apparent scarcity of prompt shipment iron do not get business, but on the other hand most of the prompt shipment iron available is readily sold. For delivery over the balance of this year, we hear of prices ranging from $15.00 to $16.00 Birmingham, but $15.50 seems to more nearly reflect the market. For next year delivery southern iron is practically on the basis of $15.00 Birmingham with ample offerings at this price and enough sales to firmly establish that quotation. Northern iron is quoted at $18.00 to $18.50 for spot iron and at $17.50 to $18.00 for next year delivery. There is practically no iron in the southern Ohio district for sale over the balance of this year.

Jackson county eight per cent silicon is firm at $22 at furnace. Southern car wheel iron is scarce and quoted at $22.50 Birmingham. Virginia furnaces are advancing prices and one of the leading producers is holding for $17.50 at furnace. We quote for last quarter of this year f. o. b. Cincinnati as follows:

Southern Foundry No. 1	$18.50 to 19.00
Southern Foundry No. 2	18.00 to 18.50
Southern Foundry No. 3	17.50 to 18.00
Southern Foundry No. 4	17.00 to 17.25
Southern Foundry No. 1, soft	18.50 to 19.00
Southern Foundry No. 2, soft	18.00 to 18.50
Gray Forge	16.25 to 16.75
Northern Foundry No. 1	19.15 to 19.65
Northern Foundry No. 2	18.65 to 19.15
Northern Foundry No. 3	18.15 to 18.65
Jackson County Silvery, 8 per cent	23.15
Southern Charcoal	25.50

Coke.—The market continues strong and while prices are not quotably higher, there is a tendency to demand full prices. Furnace interests are figuring on their supplies for next year and some contracts have been placed. Prices in the leading coke producing districts are as follows:

Wise County, Va. Furnace Coke prompt shipment	$2.50 per ton
Wise County, Va. Foundry Coke on contracts	3.25 per ton
Pocahontas Furnace Coke prompt shipment	$1.85 to 2.25 per ton
Pocahontas Foundry Coke on contracts	2.75 to 2.85 per ton
Connellsville Furnace Coke prompt shipment	2.50 to 2.85 per ton
Connellsville Foundry Coke on contracts	3.25 to 3.50 per ton
New River Foundry Coke on contracts	3.00 to 3.25 per ton
New River Furnace Coke, prompt shipment	2.25 to 2.50 per ton

†Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices on the following basis: $1.65 to $1.70 per ton on $9.00 pig iron, plus 17 percent of the advance on pig iron above $9.00 Birmingham.

Old Material.—There is a better feeling in the market and prices are well maintained with dealers asking advances on some descriptions. We quote f. o. b. Cincinnati:

Old No. 1 railroad wrought, net tons	$15.50 to 16.00
Cast machine and foundry, net tons	13.50 to 14.00
Old iron rails, gross tons	23.00 to 23.50
Old steel rails, gross tons	17.00 to 17.50
Old short lengths, gross tons	16.50 to 17.00
Old iron axles, net tons	22.50 to 23.50
Heavy melting scrap, gross ton	18.00 to 18.50
Stove plate, net tons	10.00 to 10.50
Wrought turnings, net tons	9.50 to 10.00
Cast borings, net tons	7.50 to 8.00
Car wheels, gross tons	17.00 to 18.00

Finished Material.—The market is active and firm. There is a good demand for structural shapes and mill deliveries are getting more in arrears. Blue annealed sheets are up one dollar per ton. There is general activity all along the line.

We quote: bars at 1.73c, half extras, with dealers quoting 1.85c for iron and steel out of store. Galvanized sheets No. 10 and No. 12, in car lots are 2.68c. We quote black sheets, No. 27 at 2.53c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.90c; No. 27, 2.70c; No. 16, 2.25c; No. 14, 2.20c; No. 12, 2.15c. Tank plates are firm and sell out of store at 2c to 2.10c for ¼-inch and 2.10c for 3-16, Nos. 8 and 10. Beams and channels are quoted at 2.25c to 2.35c from stock and angles at 2.10c to 2.15c for base sizes.

NEW YORK.

Pig Iron Market Still Very Active.—End of Buying Movement Approaching.

Office of THE IRON TRADE REVIEW, Room 1315, No. 150 Nassau St., Aug. 27

Pig Iron.—The demand for pig iron is still eager and apparently unsatisfied, but signs are not wanting to show that the phenomenal buying movement of August, 1906, is drawing to a close. With the exception of one or two very large transactions, the total business of the week has been only moderate and prices have not materially advanced. Some producers are demanding 25 cents per ton more than a week ago, but the majority have been conservative and have taken business at current rates. Holders of small lots of spot foundry have had a chance to gather in handsome premiums, but few have taken advantage of their opportunity to the full, being satisfied with only a moderate advance. Today it is still possible to secure $21 per ton for immediate shipment to belated melters, but little business of this sort is being done.

Sales in the local market have been confined almost exclusively to foundry grades. No sales of basic are reported and there was little or no business in gray forge. The tonnage of foundry grades handled during the week is roughly 50,000 or 60,000 tons. There were several sales of unusually large lots. One involved 20,500 tons of foundry pig of various analyses to be delivered beginning in the present fall and continuing until July, 1907. There were other sales of 7,500 tons, 3,000 tons and 4,000 tons, besides a large number of from 100 tons to 1,000 tons each. Most of the buying involved 1907 delivery, most orders for the present year being attached to contracts for next year's delivery. Although the scarcity of foundry is the cause of no little alarm, still there have been no shut-downs from lack of material and whenever the demand has become sufficiently urgent stocks have always appeared from supposedly exhausted sources.

Prices are very little, if any, higher than a week ago. While isolated producers are asking a considerable advance, the larger interests are content to hold firm at figures insuring a reasonable profit. One furnace in Virginia is asking $18.50 at the furnace, but a large producer of south-

ern iron is offering for 1907 delivery at $15, Birmingham.

Ferro-manganese has been fairly active, sales in considerable volume being reported. Spot is held at tidewater at about $85 while future rules about $80. The supply at the present moment is somewhat larger than it is likely to be in the near future, for the outlook for ore shipments from Russia is not at all promising.

Low phosphorus iron is exceedingly scarce and is the only grade that can be imported at present in competition with domestic prices. A cargo destined for American ports is now afloat. Domestic consumers are purchasing such lots as they can secure in this country, in some cases paying more than the cost of foreign iron, preferring for various reasons the home product.

The coke market is firm and both foundry and furnace are in good demand. Sales have not been heavy during the week.

The following are prices of pig iron at tidewater:

Northern No. 1 Foundry	$19.50 to 20.00
No. 2 Foundry	19.00 to 19.50
No. 2 Plain	18.50 to 19.00
No. 1 Southern Foundry	19.25 to 19.75
No. 2 Southern Foundry	19.00 to 19.50
No. 3 Southern Foundry	18.50 to 18.75
No. 4 Foundry	17.50 to 18.00

Pig Iron Certificates and Warrants.—There has been little activity among those interested in pig iron certificates and contracts on the New York Produce Exchange. Sales were few, but prices rule higher. There was one sale of October standard foundry, 100 tons, at $18.25. The following are today's quotations for standard foundry contracts.

Standard Foundry Contracts.

	Bid.	Asked.
August	19.30	20.50
September	19.25	20.50
October	18.15	19.00
November	18.50	....
December	18.35	18.40

Finished Iron and Steel.—New business in rails and structural material has been slow in coming out, but specifications on old contracts continue to arrive in good volume. Of small orders the aggregate has also been considerable and business in the smaller shapes and products has been of very satisfactory volume. No large building contracts have appeared and the bridge work under negotiation for the railroads is made up of only small jobs. The rail sales of the week included 5,000 tons for export to Mexico; 10,000 tons for the Northern Pacific; 3,500 for the Central Railway of New Jersey; the Ione & Eastern, 12,350; the Consolidated railways, 6,000; and miscellaneous sales, 1,600 tons. There was also a sale of 500 tons of light rails for Cuba. The plate market is steady and of satisfactory volume. The contract for the Philadelphia filtration plant still awaits action on the part of the city aldermen. The authorities of New York have placed a contract for three new ferry boats for the Thirty-ninth street line, requiring about 1,150 tons of plates. Bar iron and bar steel are both in fairly active demand.

The following are prices at tidewater: Angles, 3 to 6 inches x ¼ inch and heavier, 1.84½c; beams, 3 to 15 inches, 1.84½c; tees, 3 x ¼ inch and heavier, 1.89½c; plates, carloads, tank, 1.74½c; flange, 1.84½c; marine boiler, 2.41½c; refined iron bars, 1.69½c to 1.74½c; soft steel bars, 1.64½c to 1.74½c; sheets, No. 28 black, 2.50c.

Old Materials.—There has been little change during the week. Activity among the brokers continues unabated, but consumers are still unwilling to pay the prices asked. Owing to the scarcity of pig iron, the makers of cast car wheels are taking most of the scrap wheels in part payment for new wheels. The available stock is, therefore, light and holders are not anxious to sell. Heavy cast scrap in shape for charging is scarce. There have been offers of $17 gross ton delivered for heavy melting steel, but holders are demanding fully a dollar more. Sales of only a few carloads were reported. The following are prices approximately f. o. b. tidewater:

Old iron rails	$20.00 to 21.00
Old steel rails, long lengths	15.00 to 15.50
Old steel rails, short pieces	14.50 to 15.00
Relaying rails	25.00 to 26.00
Old car wheels	17.00 to 18.00
Old iron car axles	25.00 to 26.00
Old steel car axles	19.00 to 20.00
Heavy melting steel scrap	14.50 to 15.00
No. 1 railroad wrought scrap	16.00 to 16.50
Iron track scrap	14.50 to 15.00
Wrought pipe	12.50 to 13.50
Cast borings	10.00 to 10.50
Wrought turnings	12.50 to 13.00

PHILADELPHIA.

Weather Unfavorable for Furnace Operation.—Prices for Foundry Iron High.

August 28.

Pig Iron.—Twenty-dollar iron is now here, and from present indications that figure will be maintained for some time to come. This applies not only to No. 1X foundry, but also to No. 2X, which is most in demand. Indeed, consumers either in absolute need of spot iron, or unduly alarmed as to the future, have paid considerably more than $20, but these hardly reflect market conditions. Producers are doing all they can to prevent a runaway market, as they thoroughly realize the reaction in prices that would be inevitable and the dissatisfaction of purchasers on seeing pig iron sell materially lower than the price which they are paying, made several months before. Just at present physical conditions are against the producers. Not only are several furnaces out of blast for repairs, but the long continued moist weather has affected the working of others, and the output has thus been materially reduced. By November, it is believed that production will have caught up with consumption, but there is no denying that just now several of the most important producers are seriously behind in their deliveries and have practically withdrawn from the market for the remainder of 1906. It is a knowledge of these facts that is apparently leading some consumers to place orders far into 1907, and sometimes in excess of their real requirements. Those best posted on market conditions, however, do not anticipate any really serious scarcity of pig iron, and are strongly opposed to any further advance in prices. Figures for spot iron are not readily quotable, as they indicate prices that are often meant to be prohibitive, but fail to be so. Over $21 has been paid for No. 2X foundry, but the ruling quotations are from $19.50 to $20, with $19.75 as a fair average. Basic is scarce, and it is doubtful whether any could be found under $18.50. Inquiries continue numerous, but recent orders are not so numerous as in the preceding fortnight, consumers having largely covered their requirements for the present year. Prices follow:

No. 1X Foundry	$20.00 to 20.50
No. 2X Foundry	19.50 to 20.00
No. 2 Plain	19.00 to 19.50
Standard Gray Forge	17.50 to 18.00
Basic	18.25 to 18.75
Low Phosphorus	24.75 to 25.00

New Material.—There is no change to be noted in the activity at the mills unless it be a steady increase in the volume of new business pouring in. This is especially noticeable in plates, for which, in some cases, premiums are said to have been asked for prompt shipments. Strikes still prevent several mills from marking up the price of bar iron. Prices are held very firmly to the schedule, as follows: Beams, channels and angles according to specifications, 1.83½c to 2c; refined iron bars, 1.63½c to 1.73½c; steel bars, 1.73½c; plates, 1.73½c to 1.83½c.

Old Material.—More buying by the mills, the removal of railroad embargoes and large purchases by dealers, either to cover short contracts or for purely speculative purposes, have continued to send up the prices of scrap, and even better figures are looked for before long. It is believed that an active market will follow the re-

cent depression and that old material will share in the general prosperity of the iron and steel trade.

ST. LOUIS.

Very High Prices on Southern Pig.—Coke is Higher.

August 27.

Pig Iron.—The price of pig iron is advancing so rapidly these days that it is difficult to say just what the market is. The range of prices is fully $1 on No. 2 southern and more on special bands and high grades. Sixteen dollars is as low as any iron can be bought for delivery within sixty days, while $16.50 and $16.75 are more generally paid for spot. For first quarter the quotations range from $16 to $16.50. Some furnaces are still holding off, believing that they can get $18 or even $20 for their make by the first of the year. One of the large southern furnaces turned down an order for 1,000 tons first quarter at $16.25.

Iron quotations, including the freight rate of $3.50 Birmingham to East St. Louis, range as follows:

Southern No. 1	$20.00 to 20.50
Southern No. 2	19.50 to 20.00
Southern No. 3	19.00 to 19.50
Southern No. 4	18.50 to 19.00
Gray Forge	18.25 to 18.50

Coke.—On account of continued labor troubles and the scarcity of cars coke has gone up from 25 to 50 cents. A great many cars which ordinarily are used to handle coke this season of the year have been diverted to hauling fertilizer to the south. Tonnages were not so heavy this week as last, but good orders were booked. The price ranges from $6.00 to $6.80.

Metal Market

CHICAGO.

August 28.

There is a brisk consumption of all metals and the tone of the market is stronger. Pig tin is the only weak product on the list, and this has declined 1½ cents. For some time a decline was threatened in lead, but the metal has improved and present prices are firm. Whatever demand exists is strictly a consumptive one, many of the local melters having sold their output for several months ahead. We quote lake copper 18⅞c to 19¼c, and casting copper 18¾c to 18⅞c for car lots; less than car lots, ¼c to ⅜c higher. Pig tin, 42½c for car lots; spelter, prompt delivery, 6.20c to 6.30c for car lots; lead, desilverized, 5.90c to 6.00c for 50-ton lots; corroding, 6.57½c to 6.67½c for 50-ton lots; on car lots, 2¼c per 100 lbs. higher; sheet zinc, $7.75 list, f. o. b. La Salle, in car lots of 60-lb. casks. Cookson's antimony, 27c to 28c; Hallett's, 26c to 27c.

Old metals have strengthened in line with other scrap materials. We quote copper wire, 17c; heavy copper, 16½c; copper bottoms, 15¾c; copper clips, 16c; red brass, 15¾c; red brass borings, 14c; yellow brass, 12½c; yellow brass borings, 10½c; light brass, 9c; lead pipe, 5¾c; tea lead, 5¼c; zinc, 5¼c; pewter, No. 1, 24c.

NEW YORK.

August 28.

Pig Tin.—The market while quiet is firmer. Consumers are buying from hand to mouth. The following are today's quotations: Spot, 40.60 to 41; August, 40.50 to 41; September and October 40 to 40.50. London, £184 5s and £185. Arrivals for the month to date, 1,861 tons; afloat, 2,506.

Copper.—The prospects for a large consumption of copper are bright. The market is firm with prices unchanged. Today's quotations: Lake, 18¾; electrolytic, 18½; casting, 18¼. London, £84 17s 6d for both. Exports for the month to date, 14,855.

Lead.—There is a stronger tone and a better demand for pig lead. Prices are firm and higher. Today's closings, 5.85 to 5.90; St. Louis, 5.70; London, £17 10s.

Spelter.—Refined spelter is dull. Today's quotations: 6.00 to 6.10; St. Louis, 5.87½; London, £27 5s.

Aluminum.—After the recent advance of 1 cent, prices have remained unchanged. No. 1 ingots, 99 per cent pure, are offered at 36 cents, and No. 2, over 90 per cent pure, at 34 cents.

ST. LOUIS.

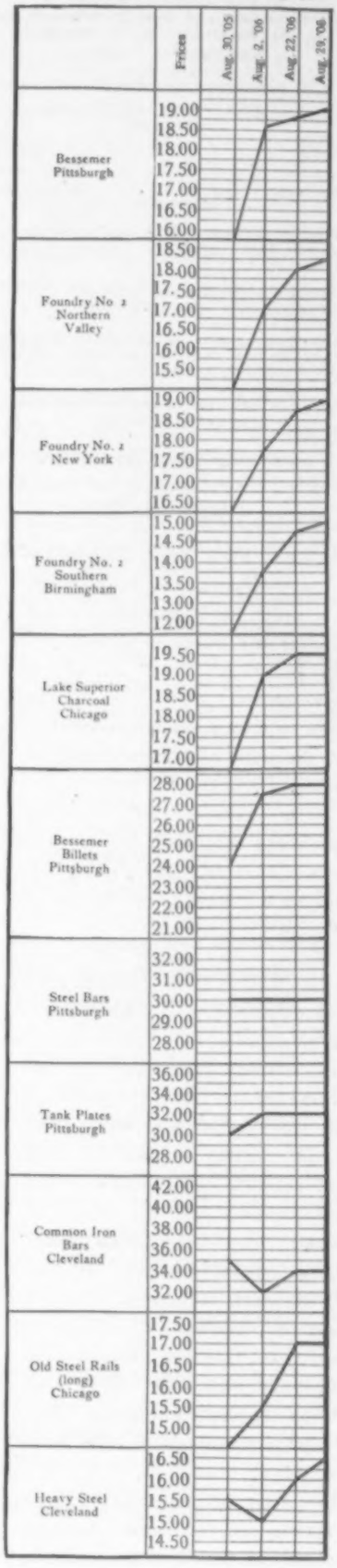
August 27.

Lead is quiet, but firm. The price of $5.70 is 5 cents higher than last week. Spelter is dull and nominal at $5.85, which is 7½ to 10 cents lower than a week ago.

There was some spirited buying in the Missouri-Kansas field last week and lead ore was advanced in some instances as much as $6.50 a ton. It is reported, $82 a ton was paid for one lot. Zinc ore was stronger during the early part of the week, the market generally advancing 50 cents a ton on all grades of ore. Toward the end of the week the demand lessened, but there was no effort to lower the price offerings. There is little likelihood that sales will be made on lower prices so long as the reserve remains as low as it is now.

PRICE CHART.

(Pig Iron Quotations are For Delivery During First Half of 1907)



THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

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August 30, 1906

STEEL FOR SAN FRANCISCO.

San Francisco last week placed its first order for structural steel for the grander city which is to replace "The city that was." It is almost exactly four months since the earthquake came to scatter the bricks and to shatter the walls of the metropolis at the Golden Gate, and the amount of steel actually ordered—not consumed—is something less than seven hundred tons. Evidently the reconstruction will be a matter of years and not of months.

During the period of exaltation which followed the earthquake, there was a fine enthusiasm for the immediate erection of a richer and more beautiful San Francisco upon the site of the ruins. Steel had proved to be the most enduring material under the terrific shaking to which the buildings had been subjected, and there was no little anxiety lest the mills of the country should be found inadequate to the task of supplying the needs of the builders. Congress was even importuned to lower or set aside import duties so that the urgent demand might be met with foreign material. People apparently thought that hundreds of thousands of tons would be needed at once. Instead, although there were producers in plenty ready to turn out structural material in quantity, a period of four months has elapsed and the total tonnage ordered is a little more than half of a single thousand tons.

A great city can not be built in a day, and the production of the supporting steel is only a small part of the tremendous task of rebuilding San Francisco. A mining camp with shanties of flimsy timber covered with sheet metal may be erected in an incredibly short time, but substantial structures worthy of a fine city are not of that kind. Plots must be accurately located, excavations made and foundations laid. Most time-consuming of all the many processes, is the arrangement of financial details.

Five years will not witness the completion of the new San Francisco, and the steel consumed during the intervening months and years will be only a drop in the huge bucket of the country's structural mills. There will be no need of importing steel and no need to worry about the supply of material. Our own manufacturers will attend to that.

PROSPEROUS BRITISH IRON TRADE.

In the British iron trade large exports spell prosperity, and the iron and steel exports from Great Britain in July of this year were the largest in the country's history, amounting to 427,778 gross tons, as to the items returned by weight, which were valued at £3,515,000, while iron and steel manufactures, including scrap, machinery, engines, cutlery, hardware, etc., were valued at about £3,315,000, making the total value of exports about £6,830,000, or about $33,200,000, at the rate of nearly $400,000,000 for a year.

The total value of iron and steel exports from the United States in June, the classification being not greatly different, and including machinery, etc., amounted to $14,085,003, and for the twelve months ended with June to $160,984,985. These are almost insignificant compared with the British exports, although our domestic iron and steel trade is so much larger. In point of pig iron production the American iron trade is about two and a half times that of the British trade. We have an enormous home market; British manufacturers must depend upon exports. We have been cultivating exports of late and the figures of British exports show how large the world's market is, and should be an encouragement to still greater efforts.

JAPAN AND EASTERN TRADE.

Recent events in the far east have not been at all reassuring to American and British manufacturers who hope to secure a share of the business in the territory opened to trade by the prowess of Japan at arms. The people of Nippon fought for the honor and the existence of their island empire and incidentally also for the open door. They seem now intent upon crowding in through that door with such speed that in the press there will be no room for the passage of the western foreigner. The door into Manchuria is technically open to all and it is not clear that the Japanese have resorted to tactics which have no place among legitimate tricks of trade. They have, in fact, merely turned to their own account the methods employed by the English and the Germans to capture and to hold trade. Yet the westerners are pretty effectually crowded out of the field.

Japan claimed and felt that in her titanic struggle with Russia she was fighting the battles of the world. The preservation of the markets of Manchuria and later of China was a benefit to the western nations secondary only to that of Japan herself. The people felt that they deserved the support of the western world, and there is little doubt that the support received, moral and financial, fell far short of expectations. Foreigners were slow to aid when the country was sorely tried; why should they now receive extra consideration? The promises made in the hour of trial will undoubtedly be fulfilled to the letter, but in principle—that remains to be seen. However, in business it is generally the letter of the contract that binds and not the spirit.

The private enterprises of Japan are probably abundantly able to compete with the selling agents of Europe and America, but financially they are not so powerful as the huge corporations of the west. The Japanese govern-

ment, which is nothing if not thorough, has adopted a plan whereby the industries of the people are strengthened and at the same time enterprises likely to take on the character of trusts are brought under rigid control. The simplicity and double-edged effectiveness of the plan excites admiration. The government merely takes a large block of stock in all national enterprises, thus rendering support at critical times easy, and also securing a voice in the management of affairs. This plan has already been applied to the railroads and many other industries in Japan itself, and the same system is to be applied for the exploitation of Manchuria, a multi-millionaire corporation having been formed for that express purpose.

What chance will there be for the American or German manufacturer in competition with a powerful government? Japan still buys largely of our iron and steel and machinery. The islands are poor in raw material, but there are immense stores of both iron ore and coking coal in north China. Even now there are plans under way for the development of a Chinese Pittsburg, and western capitalists will not be asked to lead the way.

There is another menace which the American manufacturer does not as yet appear to see. Our shops have been able to compete with the world because of the superior management and of the superior efficiency of the workmen. Since the introduction of the Taylor system and other methods of intensified production, the Japanese have been keenly on the alert. Under a regime of shop management which requires merely patient and deft obedience on the part of the operatives, who is likely to survive,—the American, at heart an individualist, or the nimble Japanese whose team work is the wonder of us all?

AN EXPENSIVE QUARANTINE.

The late Dr. S. P. Langley opened a presidential address years ago before the American Association for the Advancement of Science by taking issue with those who were prone to liken the progress of science to the onward march of a victorious army, and holding that the movement should rather be compared with that of a disorganized mass of men, small bodies of whom would make incursions, sometimes forward, sometimes lateral, and sometimes backward, with frequent retreats, the real progress being only spasmodic and accomplished only at irregularly distributed points.

As to progress in iron and steel making processes Dr. Langley's simile is more apt than the more comfortable one which he criticized. Years ago, when the Bessemer and open-hearth steel making industries were in their infancy so far as concerned economical results, the blast furnace process appeared to have attained almost to perfection, yet of late the dry air blast and the use of gas engines have promised to modify the blast furnace industry in important ways. In steel alloys Hadfield accomplished entirely new results with manganese, in a field which for years had appeared well trodden down. Later, the discovery of high speed steel came with shocking suddenness.

The affinity of iron for oxygen presents a field some portions of which are stamped down hard, while others have scarcely seen the foot of man. Metallurgical processes for the breaking of this union have reached a high degree of refinement; to prevent this union, substantially nothing has been done but to prevent the contact. Iron or steel is coated with tin, spelter and other metals and with paint, tar and other non-metals, and is imbedded in concrete, to prevent access of oxygen, but nothing practical has been accomplished towards rendering it immune. Quarantine is the only means of prevention, and this quarantine is enormously expensive.

There is no metal which can compare with iron in the variety of chemical and physical characteristics producible in it by the introduction of other metals and metalloids. If the world had all its other metals, with their uses and capabilities known as they are, but no iron, it would be incredible to the most learned that a new metal could be found which would be susceptible to the wide modifications now so well known to be possible to iron.

With such wonderful known possibilities, it would be absurd to assert that no method of treatment, or combination with other elements, could destroy iron's affinity for oxygen. If a method were announced tomorrow for treating or alloying iron so that it would not rust, no one could say that something was accomplished which had been thought impossible, because no one has any right to think it impossible. Could the progress of science be likened to the orderly forward march of a victorious army, leaving nothing of value behind, presenting an even front, and making no useless forays, the thought would be justifiable, but the case is quite different, as Dr. Langley insisted.

Indeed, so indifferently is the army managed that the strength of the enemy is quite in doubt. Its relative strength against iron and steel is entirely unmeasured, since many scientific experiments have appeared to show that there is little difference, while numerous instances in actual practice have appeared to show a wide difference, and the discrepancy between practice and experiment has not been explained.

Some eight years ago a patent was granted to George W. Gesner for a process of alloying iron and hydrogen, whereby extraordinary qualities were to be engendered of resistance to oxidation and corrosion. That patent was issued only after a contest and the submission of samples to the patent office, which samples seemed to the patent office to possess distinctly novel characteristic. Apparently, however, the matter has not passed beyond the sample stage.

The expense of maintaining the quarantine between iron and oxygen is so enormous that it is hard to conceive any invention relating to iron and steel metallurgy which would be more valuable than one which would make iron immune and render the quarantine unnecessary.

Reports of big crops and heavy railroad earnings continue to increase the probability that prosperity will be prolonged.

CENTRAL FOUNDRY MEETING.

Minority Interests Secure Four Representatives in Directorate.—Annual Report.

At the annual meeting of the stockholders of the Central Foundry Co., held at Jersey City, N. J., Aug. 23, the questions raised by the minority interests were satisfactorily arranged, four directors being elected to represent these stockholders. The new directors are: Charles R. Schmidt, of Baltimore; Henry E. Bullock, of Chicago; S. Watts Bowker, representing Waterman & Anthony, and A. Klamroth, representing George Leask & Co. The following directors retired from the board to give place to the new members. Winthrop L. Rogers, Albert L. Swett, Joseph Lodge and H. H. Spencer.

In response to a request from the committee of the minority interests that stockholders be given more detailed information, a resolution was passed to appoint a committee of three to examine the company's books. As soon as the examination is completed, the stockholders will be furnished with a full report.

The annual report for the year ending June 30, 1906, shows a decrease of $17,654 in net earnings as compared with the previous year, but an increase over the earnings of 1904. After the payment of interest on the $3,863,000 20-year 6 per cent bonds, the balance was used for the replacement and improvement of equipment, depreciation and miscellaneous expenditures. No dividends have as yet been paid on the $7,000,000 preferred stock, which is 7 per cent cumulative, nor on the common stock, which is of equal amount. The company has no surplus, but the cash on hand according to the report, is $65,543.

The income account for the year is as follows:

Net earnings	$493,769.21
Expenditures for plants and equipment	36,095.23
Bond interest	231,780.00
Depreciation	225,893.98
	$493,769.21

The earnings statement of the Central Iron & Coal Co., a subsidiary company, is as follows:

Earnings for year	$70,333.82
Less depreciation	29,514.27
Net profit	$40,819.55

Coal and iron ore lands had been acquired and a battery of 40 Semet-Solvay by-product coke ovens had been in operation since March 1, 1906. The furnace at Tuscaloosa is to be blown out in the near future for relining and necessary changes.

The income account of the Central Radiator Co., also a subsidiary company, is as follows:

For year ending June 30	$9,601.62
Depreciation	4,373.46
Net profits	$5,228.16

President Alfred Fowle Jr., in his report says:

"Your profits, as shown above, have been largely made up by the manufacture and sale of soil pipe and fittings. This profit, however, is due in large measure to the active demand, which has enabled your officers to obtain profitable prices, and has resulted, as they knew it would, in a large amount of new competition, the number outside of the Central Foundry Co. now engaged in that line being in excess of the whole number in the line when this company was formed. While we have made progress and considerable profit in the manufacture of "Universal" pipe and fittings and F. & W. fittings, both of which the company absolutely controls, the lack of sufficient capital has kept our progress down so that the earnings in these departments do not nearly approximate your fixed charges and expenses. The producing capacity of soil pipe and fittings under the normal labor conditions is now over double the possible consumption during prosperous years, and is much in excess of that when building operations throughout the entire country are less active than at present."

DETROIT FURNACE STARTS.

The Detroit Furnace Co., Detroit, Mich., put its stack in that city in blast Aug. 22 and is now casting about 100 tons a day. It has overhauled and rebuilt the old plant of the Wayne Furnace Co. J. C. Clutts, who some time ago retired from the presidency of the Wellston Iron & Steel Co., is president of the new company; J. K. Pollock, of Rogers, Brown & Co., Cincinnati, is vice president; Charles F. Fraser, connected with interests which were formerly active in the Wayne Furnace Co., is secretary and treasurer; and Porter McMillan, an experienced furnace man who was connected with Mr. Clutts at Wellston, is general manager. The output of the furnace will be sold by Rogers, Brown & Co.

A. L. Taylor, Oakland, Cal., successor to Fair, Taylor & Co., reports that the work of the late S. R. Church on "Analysis of Pig Iron" can no longer be had, as the remainder of the edition was destroyed in the San Francisco fire.

YOUNGSTOWN SHEET & TUBE STARTS.

The new Bessemer steel plant of the Youngstown Sheet & Tube Co., was started on Wednesday of last week and has been in continuous and successful operation since. The first heat of metal was melted in the cupolas in fifty minutes and blown in twelve minutes; it analyzed as follows: Carbon, 0.08; manganese, 0.39; sulphur, 0.047; phosphorus, 0.099; silicon, 0.009. By the end of the week two cupolas and both converters were in operation without a single cobble being made, every ingot being rolled into a perfect billet.

Some of the first billets were taken to the skelp mill, worked there, and were then made into pipe, the process of converting pig metal into finished pipe requiring less than four hours. The working of the new machinery has been all that could be expected, as there has not yet developed a hot journal at any point in the engines, tables or the mill.

The fires were lighted by Miss Marie B. Burkenbush, daughter of the superintendent of the mill, C. F. Burkenbush. Mr. Burkenbush, who had charge of the construction of the mill, has had years of experience, having been stationed at Johnstown, Homestead, Chester, Pa., Wheeling and other places. Frank Kinkson, formerly of Joliet, is superintendent of the Bessemer department on one turn and M. B. Holliday, of Pueblo, in charge of the other. The blowers are J. W. Duncan and T. H. Hamley, formerly of the Shoenberger mill at Pittsburg; John Strick, of Youngstown, is vessel foreman. The first cupola man is George Eiser, of Lorain, and the second, John Sechler, formerly of the Republic mill. Charles Raymond, formerly of Wheeling, is foreman of the blooming mill, and John Daugherty, also of Wheeling is clerk to Supt. Burkenbush. Thomas Higgins, of Youngstown, and Jos. Papasell, of Pittsburg, are rollers in the blooming mill. The rollers on the continuous mill are: W. B. Nelson, of Duquesne and John Holm, of Waukegan, Ill.

This plant was described and illustrated in THE IRON TRADE REVIEW of August 2, 1906.

The McKinnon Iron Works, Ashtabula, O., were destroyed by fire Aug. 25, with a loss of $40,000 and insurance of $12,000. The plant was the property of W. S. McKinnon, state treasurer. A number of neighboring buildings in the harbor business section were badly damaged.

COMMON COMPLAINT

Concerning Labor at the Mines.—Rains Put Out Fires.

Office of THE IRON TRADE REVIEW.
Duluth, August 25.

Rains that have interfered largely with stripping and in some few instances with mining, but have put an end to the forest fires that were beginning to come too close for comfort, have marked the past week. A few hours delay occurred at the Agnew on the night shift Monday, but most of the handicap in rainy weather in the open pits lies in the refusal of the men to work. The labor situation in general all over the range is the source of common complaint, and added to this are the troubles of those mines which have to contend with the shortage of cars on the Great Northern. Compared with a dozen or more mines which are supplied with only one-third or one-fourth the number of cars necessary to take care of their possible production, only one mine has reported that its service is equal to that of last year. The obvious conclusion, since the railroad has as many cars as last year and under the existing adverse conditions has forwarded about 300,000 tons more ore this year than last, is that a number of new properties are being served. In fact the new work for and during this season including the new stripping of old properties is a more noteworthy part of the season's operations than the mining activity for scarcely one of the old mines is producing any where near its capacity.

The shipments during the week, Aug. 14 to 21, from the three ports at the head of the lakes were about 75,000 tons better than the previous week and about equal to the average shipment during the season for a week, but not up to the later weekly records. Forest fires in the past two weeks cast a pall on Lake Superior which, succeeded by a heavy fog and bad weather, have made the boats slow. The figures for the seven days from the 14th to the 21st, are as follows. Two Harbors, 265,853 tons; Duluth, 385,530 tons; and Superior, 194,918 tons, a total of 846,301 tons. In 1905 there were shipped during the corresponding week from Two Harbors, 261,988 tons; Duluth, 293,056 tons; and Superior, 116,309 tons, in all 671,355 tons, or 174,946 tons less than this year, Superior falling down badly. The total this year from the Mesabi and Vermillion ranges up to Aug. 21 is therefore 13,933,168 tons as compared with 12,615,095 tons last year, a difference of 1,318,073 tons.

DEATH OF JAY C. MORSE.

Jay C. Morse, one of the founders of the firm of Pickands, Mather & Co., Cleveland, died at his home in that city Aug. 22, after a prolonged illness. Mr. Morse was born in Painesville, O., 68 years ago. He went to Cleveland when 20 years of age, and secured employment in a railroad freight office. He afterward entered the employ of the Cleveland

JAY C. MORSE.

Iron Mining Co. as its agent in the Marquette district, where he remained until 1882, when he returned to Cleveland as vice president of the company. A short time afterward he helped to organize the firm of Pickands, Mather & Co. He did not take an active part in the local management of the firm, but the other members consulted him frequently and valued highly his advice. In 1885 Mr. Morse became president of the Union Iron Co. of Chicago, which afterward consolidated with the North Chicago Rolling Mills Co. and the Joliet Steel Co., which concerns became the Illinois Steel Co. He was president of the Illinois Steel Co. until succeeded by John W. Gates. Mr. Morse was also president for a time of the Minnesota Iron Co., and helped to organize the Minnesota Steamship Co. He remained at the head of these companies until 1895, when, on account of ill health, he retired from the presidency and served only on the boards of directors. He continued as chairman of the various directorates for several years longer and then retired from business. Some years after the death of Col. Pickands Mr. Morse married Mrs. Pickands, the widow of his former partner. She is the sister of the late senator M. A. Hanna, H. M. Hanna and L. C. Hanna. In recent years Mr. Morse spent a considerable part of his time in Thomasville, Ga., where he had a home. He divided the remainder of his time between Cleveland and Chicago.

PASSAIC STEEL CO.'S AFFAIRS.

At a meeting of the board of directors of the Passaic Steel Co., on Aug. 22, the resignation of Frederick A. Schick, secretary-treasurer, was received. J. Barclay Cooke, the original treasurer and nephew of the founder of the mills, was chosen manager to succeed Thomas J. Arnold. Several resignations of the office staff were accepted, nearly all of those resigning being men who had come from the Pittsburg district with ex-President McConnell.

On Aug. 24 the directors by resolution directed the secretary to secure an accounting from the promoters of the corporation regarding the flotation of the bond issue. It was alleged that no accounting had ever been made of the money received from the sale of the bonds and that each purchaser of bonds received a stock bonus. A special meeting of the directors has been called for Sept. 4 to receive this statement from A. C. Fairchild and F. F. Searing, formerly president and vice president and others prominent in taking over the old Passaic Rolling Mill. It is desired to know what became of the difference between the $2,000,000 five per cent first mortgage bonds and the price paid for the property of the old company which amounted to $1,144,000. The bond issue was later increased to $2,500,000.

Frederick F. Searing, mentioned as prominent in the formation of the present company, announced later that complete records of the transactions in question are on file in the offices of the company at Paterson. He added that he had been neither officer nor director of the company since April, 1905.

Goes on Rails.—The Ohio works of the Carnegie Steel Co. at Youngstown went on rails again Aug. 26. The mill was on sheet bar and billets for two weeks. The run on rails will be continuous for the balance of the year.

The Brown-Bonnell plant of the Republic Iron & Steel Co. has received an order from the firm of Mark & Co., Chicago, for skelp steel that will keep the continuous bar mill working for the next three months.

DEATH OF JAMES DREDGE.

James Dredge, whose death was briefly noted in THE IRON TRADE REVIEW last week, was born in Bath, England, July 29, 1840. He was the son of the late James Dredge, of Bath, England, a bridge engineer of prominence and widely known in England 75 years ago.

In 1858, Mr. Dredge entered the office of the well known D. K. Clark, remaining with him until 1861. During the time spent in Mr. Clark's office, he met that brilliant but unbalanced American, Zerah Colburn, and his equally brilliant but more distinguished countryman, Alexander Lyman Holley. Many American engineers now living remember Mr. Dredge's eloquent address delivered in 1889 at the unveiling of the Holley statue.

In 1867, Mr. Dredge entered the office of Sir John Fowler, remaining there three years. During this period, he was engaged mostly with the Metropolitan railway system, in conjunction with Sir Benjamin Baker. *Engineering*, one of the leading engineering periodicals of the world today, was started in 1866 by Zerah Colburn, and on his death in 1870, Mr. Dredge, associated with Mr. William H. Maw and Alexander T. Hollingsworth, formed a partnership for the publication of this paper, becoming joint editor with Mr. Maw. Together they built the paper up to its present position of authority and prominence.

Mr. Dredge was officially connected with the Vienna exhibition in 1873 and the Centennial exhibition in Philadelphia in 1876, being royal commissioner from England. At the Paris exposition of 1878, he was made Officier de l' Instruction Publique; at the Paris exposition of 1889, he was Officier de la Legion d'Honneur; at the Chicago exposition of 1893, he was a member of the British Royal Commission. He was also officially connected with the Antwerp exhibition of 1894 and the Brussels exposition of 1897, being at the latter, commissioner general for Great Britain. He was decorated for his services at Brussels in 1897, and in 1898, he received the order of Companion of St. Michael and St. George.

Mr. Dredge wrote the following works: "The Pennsylvania Railroad;" "Electrical Illumination," two volumes; "The Paris International Exhibition, 1889;" "The World's Columbian Exhibition, 1893;" "Modern French Artillery;" "Transportation Exhibits at the World's Columbian Exhibition;" "Thames' Bridges;" "Memoirs of Sir Henry Bessemer;" "The Works of Messrs. Schneider & Co."

Mr. Dredge was well known in this country, and many American engineers will remember with pleasure the unfailing hospitality which he showed them upon their visits to

JAMES DREDGE.

Great Britain. Although he had been failing in health for some time, his death on August 15 was unexpected.

YOUNGSTOWN MOLDERS

Out on Strike to Enforce Demands for New Wage Scale.

The molders and coremakers within the jurisdiction of the Youngstown, Ohio, local went out on a strike Saturday morning, Aug. 25, after holding a meeting to discuss the situation. About 300 skilled journeymen are affected. The wage scale of the I. M. U. in Youngstown expired June 1. The foundry owners informed the members of the I. M. U. that trade conditions did not justify an increase in wages of 10 per cent as demanded under the new agreement presented. The refusal of the manufacturers to accede to the new wage rate adopted by the union was reported to national headquarters of the I. M. U. Business Agent O'Niel, of Columbus, made an inspection and submitted a report to President Valentine, who then went to Youngstown himself. He failed in securing a conference with the bosses, and a strike was declared a week later. The journeymen have the sanction of the national executive board in the stand they have taken. Several small foundries on the outskirts of Youngstown are closed as a result of the strike, while all of the big shops in the city are crippled to some extent. The foundry owners are members of the Manufacturers' Association of Youngstown, and a bitter struggle is looked for. The molders have been receiving a minimum wage rate of $3 per day of nine hours and the coremakers were paid $2.75.

Long Strike Ended.

The United Mine Workers of America in Alabama have called off their strike at the mines of furnace companies which went into effect July 25, 1904, and which cost a couple of million dollars to the two sides. The union miners are now seeking employment wherever they can secure it, preferring, of course, work in such mines as recognize the union. Many men are finding employment in the open shop mines. The furnace companies in Alabama have been getting very good results from the new labor which they have been bringing in, declining to recognize the union miners.

Labor Notes.

Union molders employed by the Treasure Stove Works, at Gallipolis, O., have gone on a strike, refusing to work on castings for a Port Chester, New York concern, whose men are also out.

The blacksmiths employed at the Illinois Central railroad shops at Paducah, Ky., are on strike because one of their members was discharged.

It has been held by Acting Attorney General Robb that "hard hands," commonly employed in the maintenance of the tracks of railroads, are not "skilled laborers" within the meaning of the term as used in the emigration laws now on the statute books. This will prevent the importation of Mexican greasers into New Mexico and Arizona for work on the southwestern trunk lines.

The membership of the National Metal Trades Association was 836 on Aug. 1 according to monthly memorandum of applications sent out.

The Bird Iron Co., of Culbertson, some miles back of Ironton, O., has followed the plan of the blast furnace companies in Ironton and made a voluntary increase in the wages of their employes.

The bi-monthly settlement of the puddlers' and finishers' wage scale will be made next week at the general offices in Pittsburg. The boilers are now being paid $5.75 a ton and the finishers two per cent less than the first part of the summer. The wage scale is based on the sales sheets with a $5 minimum.

RAILROAD MASTER BLACKSMITHS' CONVENTION.

The 14th annual convention of the International Railroad Master Blacksmiths' Association was held at the Sherman house, Chicago, August 21 to 23, inclusive, with a large attendance. The first session was opened by prayer by the Reverend William White Wilson, and H. S. Taylor extended the usual welcome on behalf of the city authorities, the response being made by W. W. McLellan, of Denver. President D. B. Swinton, in his annual address, reviewed the work of the association during the past year.

At the afternoon session on the 21st, the following papers were presented: "Frogs and Crossings," by S. Uren; "Flue Welding," by G. H. Judy; "Classification of Work in the Shop," by W. J. Mayer; "Tools and Formers for Bulldozers, Steam Hammers and Forging Machines," by Thomas F. Keane. For bulldozer work or ordinary bending, which does not require sharp corners, the author of this paper considered cast iron formers and dies properly reinforced perfectly satisfactory. Where sharp corners are required, the author advocated reinforcement of the face of the former with steel. For drop hammer or steam hammer work, and for practically all the work performed by such machines except bulldozers, steel dies were considered the only satisfactory type to use.

The papers presented at the Wednesday morning session were as follows: "Discipline in the Railroad Blacksmith Shop," by A. W. McCaslin; "Case Hardening Wrought Iron," by G. E. Hinkins; "Best Method of Annealing High Speed Steel," by George Lindsay; "Best Coal for Use in the Smith Shop," by John Buckley; "Piece Work Versus Day Work," by R. A. Mould.

The final session on August 23 opened with a discussion on Mr. Judy's paper presented the previous day, the consensus of opinion being that a judicious use of the piece work system obtained the best results. The paper entitled "The Making of Locomotive Frames" was then presented by James Fenwick, and a committee on Thermit welding, of which George Kelley was chairman, reported on the welding of 33 locomotive frames, now in service, with Thermit. The general results have been satisfactory.

The following officers were elected for the ensuing year. President, J. S. Sullivan, Pennsylvania Lines, Columbus, O.; first vice president, George H. Judy, Baltimore & Ohio, Glenwood, Pa.; second vice president, J. W. Russell, Pennsylvania R. R., Renova, Pa.; secretary and treasurer, A. L. Woodworth, Cincinnati, Hamilton & Dayton, Lima, O.; chemist, G. H. Williams, Boston, Mass.

It was voted to hold the convention of 1907 in Montreal.

Many Important Topics.—The report of the proceedings of the eleventh annual convention of the National Association of Manufacturers has just been issued in a paper bound volume of 227 pages. The convention was one of much interest, as many important subjects were discussed, including labor problems, merchant marine, education, incorporations, irrigation, Panama canal, patents, postal affairs, pure food, consular reform and other topics. The report is complete and is well printed.

Furnace Activities.—Tod furnace of the Youngstown Steel Casting Co., was blown in Aug. 26. It is expected that the Girard furnace will be blown out in a few days to be relined. The new furnace of the Republic Iron & Steel Co. at Haselton, will be ready for blast about next Monday. It is a modern stack and will connect with the local Bessemer plant of the company by a hot metal track.

The Punxsutawney furnace at Punxsutawney, Pa., will be blown out September 1, for relining and repairs.

Three mills on the new side of the plant of the American Sheet & Tinplate Co. at Struthers, O., resumed Aug. 22.

The old blast furnace of the Pottstown Iron Co., Pottstown, Pa., may be blown in after a long idleness if repairs are found feasible.

The old Lehigh mill of the Allentown Rolling Mills, Allentown, Pa., has been sold and will be dismantled by H. A. Hitners Sons, Philadelphia.

The plant of the American Can Co. at St. Paul, Minn., was damaged to the extent of $300,000 by fire Aug. 28. Two neighboring plants also suffered heavily.

The work of cutting the iron beams and tangled mass of rods which formerly constituted the Ferris wheel, the wonder of two world's fairs, has begun in St. Louis. It will take sixty days to prepare this steel for transportation. It will then be hauled to the steel mills in Granite City, Ill.

STRUCTURAL ORDERS

Light in August, Are Expected To Total Big Tonnage During September.

New York, Aug. 28.

The month of August will not loom very large upon the American Bridge Co.'s books, which, however, worries no one, for the mills are filled to overflowing with work. September is expected to make up for the quiet of the past few weeks. Several "big jobs" have already appeared. The Harriman lines have compiled the requirements for bridge work during the coming year and are in the market for the material, between 20,000 and 25,000 tons of steel. Similar requests for bids are also due from other large railroads. The City Investment Co. building, which will require from 10,000 to 12,000 tons, has also entered the contract stage. The orders of the week although small were fairly numerous. The following tonnages will be supplied by the American Bridge Co.: Bridge work for the Erie railroad, 150 tons; steel for plant of the Superior Portland Cement Co., of Ohio, 635 tons; a cement plant for the Carnegie Steel Co. at Pittsburg, 500 tons; Portland & Seattle railway bridges, 800 tons; a bank building for New Orleans, 480 tons; and a number of miscellaneous orders. Among other contracts placed during the week are the following: New York, New Haven & Hartford railroad, one bridge, 1,680 tons; two Scherzer lift bridges, 800 tons. An order for 300 tons of bridge work for the Southern railway was secured by the American Bridge Co.

The Atlas Engine Works of Indianapolis, whose Chicago sales offices have for several years been in suites 900-902 Fisher building, will, upon completion of the new Fisher building in November, increase their present rather cramped quarters by the addition of several larger offices. Frank H. Baker, connected with the Atlas for over twenty years, will continue at the head of its Chicago organization.

The contract for 4,000 miles of rabbit-proof wire netting was awarded by the New South Wales government of Australia to the British Association of Netting Manufacturers, who will supply 3,000 miles of 42 x 1½ x 18 netting, at $121.78 per mile, and 1,000 miles of 36 x 1¼ x 18, at $105.30 per mile. The Victorian government is following in similar lines

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The St. Louis Blast Furnace Co. closed down Aug. 27 for sixty days to make extensive repairs.

BUYERS BUSY

IN PLACING PIG IRON ORDERS IN ENGLAND

And Advancing Prices Lessen Probability of Exporting to the United States.—Many New Ship Orders.

(Special Correspondence.)

Birmingham, Eng., August 14.—A remarkable change has come over the Midland iron trade during the last fortnight. Buyers seem to have suddenly made up their minds to place their orders for pig iron, with the result that raw material is now generally 3 shillings dearer than it was. Sellers are quoting quite 2 shillings above even these figures, with the object of prohibiting sales. Germany, France, Belgium and the United States are all buying considerable quantities of pig iron. A few weeks ago Barrow mills for rails, plate and merchant iron, were stopped for want of orders, but they are now all restarted, and the Midland works are also running on full time. The eagerness of buyers has been increased by the heat, which has made many of the works quite unbearable. All of them, with a few exceptions, shut down for the whole of the bank holiday week. Smelters are now safe for orders until Christmas and during the autumn, are likely to adopt an attitude of independence. For finished iron there is a steadily improving tone, and rather better prices are being obtained.

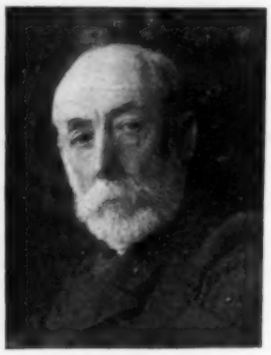
Resurrection of Puddling.

The feature of the Iron and Steel Institute meeting in London which has attracted most interest throughout the trade, was the general anticipation of a resurrection of puddling. British iron masters generally agree with this prophecy, and a number of puddling furnaces have been rebuilt or restarted. But the problem puzzling everybody is where the men are to come from, the race of puddlers having apparently very nearly died out. Everyone agrees that the puddling of the future will have to be mechanical.

The latest reports of public companies testify to continued prosperity. The huge concern of Guest Keen and Nettlefolds announce profits for the year ended June 30 amounting to £427,156, to which they add £142,808. After various deductions, they have for distribution £408,395. They are to pay 5 per cent on preference shares, ten per cent on ordinary, carrying to reserve £150,000 and carrying forward £167,145. The reserve fund now amounts to £900,000. Messrs. Pease & Partners have a profit of £169,000, and pay an eight per cent dividend, setting aside £25,000 for renewals. Messrs. Vickers Son & Maxim, are credited with the intention to absorb the profitable undertaking of the Parkgate Iron Co., Rotherham.

Popularity of the Hickmans.

There is no more popular iron master in the Midlands than Sir Alfred Hickman. Sir Alfred whose steel making concerns are among the biggest in the country, was one of the unfortunate ones at the last election; but the West Wolverhampton Con-



Sir Alfred Hickman.

servatives are still devoted to him, and will be only too pleased if he would again become their candidate. At a recent meeting Sir Alfred gave his final answer to numerous appeals of this kind, by pointing out that at the age of 77 he must retire, though he meant in the future, as in the past, to place his best services at their disposal. Mr. Edward Hickman, a son of Sir Alfred, who inherits alike his father's ability and popularity, has just been appointed director of the Midland Railway Carriage & Wagon Works, Ltd., one of our largest local concerns.

It is very manifest that the present government does not possess the confidence of a large number of Midland iron masters.

Big orders continue to be placed for gigantic ships. Armstrong, Whitworth & Co., of Tyneside, have received orders for three battleships for Brazil, each of thirteen thousand tons displacement. They are to be built at Elswick, at a cost for each vessel of £1,300,000. The Germans do not disguise their disappointment at the loss of these orders, some of which they hoped would have found their way to the Fatherland.

PERSONALS.

E. A. Bayard, sales manager in St. Louis for Matthew Addy & Co., has returned from a lengthy vacation in Michigan.

Walter B. Smyth, assistant sales agent at Cleveland for the Cambria Steel Co., is spending his vacation at Atlantic City.

Alexander Yule, secretary of Decamp Bros. & Yule, St. Louis, is in the east making a tour of inspection of the coke ovens.

Wm. B. Kerr, superintendent of the Tonawanda Iron & Steel Co., will give his name to the first of the 600-foot freighters, building at Lorain for that company.

J. G. Coleman, for many years secretary of the Wisconsin Malleable Iron Co., Milwaukee, has retired, and has been succeeded by W. P. Westenberg.

Barton R. Shover, chief electrician at the Ohio works of the Carnegie Steel Co., has been made electrical engineer at the new plant of the Indiana Steel Co., Gary, Ind.

John Sargent, of Domhoff & Joyce, has sailed for England for a brief visit to his old home. Clare Miller, of the same firm, has been spending a short vacation at Jackson, O.

R. R. Sterling, chief engineer of the Colorado Fuel & Iron Co., for the southern district of Colorado, has resigned to become general superintendent of the Tacoma Smelting & Refining Co., Tacoma, Wash.

S. T. Wellman, president of the Wellman-Seaver-Morgan Co., Cleveland, O., who has been in Japan for the last three months, accompanied by his wife, son and daughter, sailed from that country Aug. 4, arriving safely at San Francisco on the 21st.

H. I. Glatfelter has been appointed trustee by the courts to wind up the affairs of the New York County Iron Co. The leases of the properties will be sold, and the iron ore business, which has been discontinued for the past twenty-five years, will be resumed.

J. P. Johnston, for several years general sales manager for the Weber Steel Concrete Chimney Co., Chicago, has resigned to become sales manager of the water tube boiler department of the Atlas Engine Works, Indianapolis, with offices at the company's plant. J. F. Davis, formerly connected with the Pittsburg organization of the Atlas works, has been transferred to the company's offices at Chicago.

ELECTRIC FURNACE METHODS OF IRON AND STEEL PRODUCTION.—III.

BY JOHN B. C. KERSHAW.

The Keller Furnace and Process of Smelting.

The French firm of Keller Leleux & Cie. had been engaged for many years in the production of calcium carbide, ferro-silicon, ferro-chrome and other alloys of iron by aid of the electric furnace, when in 1900 they turned their attention to the manufacture of iron and steel by similar methods of heating. In the experimental trials of various types of furnace for this purpose, the surplus electrical power of their large works at Livet, Isere, was used, a total of 15,000 horsepower (water) being available at this place. The firm has other works at Kerrousse (Morbihan) where 600 horsepower is developed hydraulically. The output of ferro-alloys by these two works of 1904, included 3,000 tons of ferro-silicon, 1,800 tons of silicon-spiegel, 960 tons of ferro-chrome, and considerable amounts of ferro-manganese.

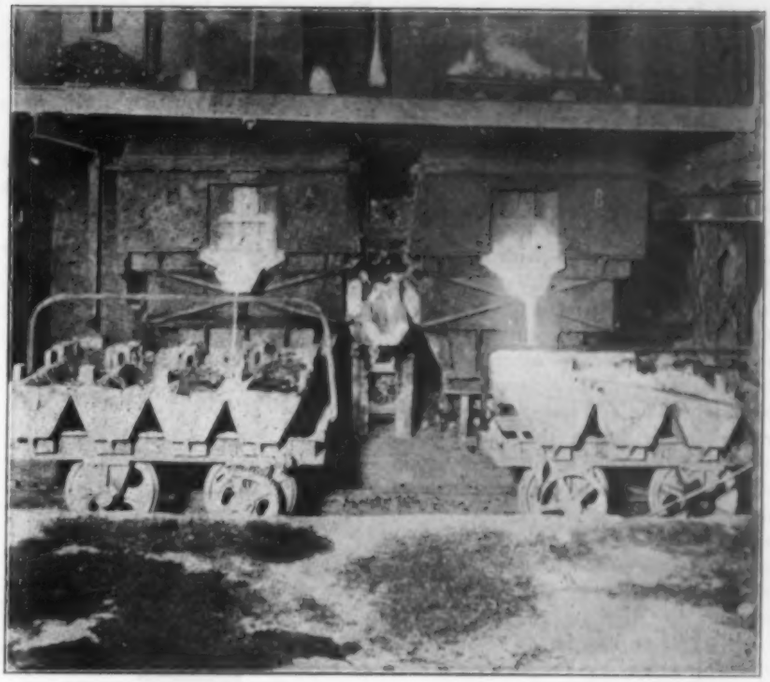


FIG. 2.—VIEW OF KELLER FURNACE DURING DISCHARGE.

The experiments with electric furnace methods of iron and steel production were at first carried out at Kerrousse, but as the size of the furnace used and current required for these was increased, the experiments were transferred to the larger works at Livet, and it was here that the Canadian Expert Commission witnessed the Keller furnace and process in operation in March, 1904. In the following description of the furnaces and process, devised by Keller for iron and steel production, the report of the Canadian commissioners has been largely drawn upon. This has been supplemented, however, by information obtained by personal correspondence with the inventor—M. Keller, and by facts drawn from recent issues of the English, French and German technical journals.

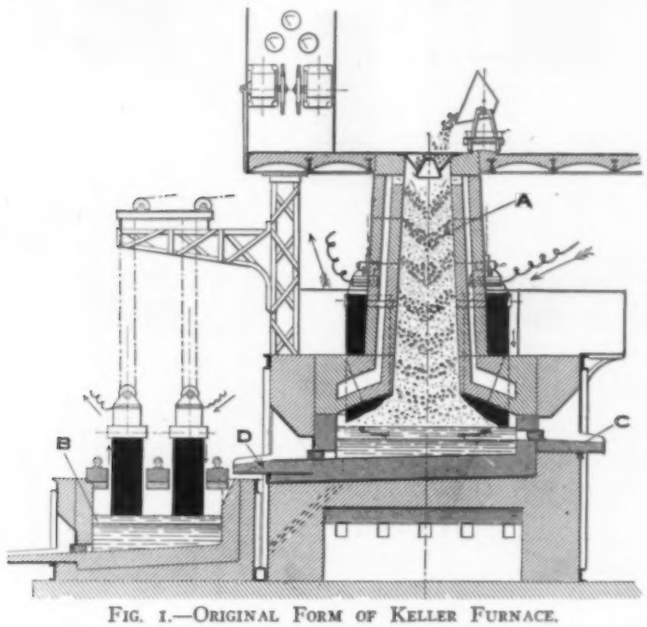


FIG. 1.—ORIGINAL FORM OF KELLER FURNACE.

Note.—The preceding articles of this series appeared in THE IRON TRADE REVIEW of June 28, and July 26, 1906.

The Keller Iron Smelting Furnace.

Keller's first patents for an electrically heated iron smelting furnace are dated 1900. Fig. 1 shows the general arrangement of this earliest furnace, which in appearance and design resembled the ordinary blast furnace. The iron ore was charged into the vertical bell-shaped shaft A with the requisite amount of coke and lime, and the materials were heated in their slow progress downwards by currents passing from the electrodes shown on either side of the column. The ore was reduced to metallic iron in its descent and on reaching the hearth of the furnace in the molten state, the slag passed off at C, while the molten iron was run by D into B, where it was further refined by electric heat before casting into pig.

As this type of furnace has been displaced by one which is described below it is not necessary to enter into further details concerning it; but it may be stated that a 375-horsepower furnace of this earlier type was erected and worked for some time at Kerrousse, and that it was estimated that one ton of steel could be produced in it with the expenditure of 2,800 kilowatt-hours of electric power, at a total cost of twenty dollars.

The second form of furnace which has been designed by Keller for smelting iron ore is shown in Figs. 2 and 3, this being the form used by the Canadian commissioners in their trials of the Keller process at Livet. The

furnace is of the resistance type, and consists of two iron-cased shafts, A and B, communicating below by a horizontal canal C. The shafts are lined with refractory material, and each is provided with a massive carbon block electrode, D, slung on chains, and movable in either a horizontal or vertical direction. The base of each shaft is also provided with a carbon block electrode, electrically connected the one to the other, by thick copper bars F, passing outside the horizontal canal. The vertical electrodes hang for two-thirds of their length, within the shaft. The refractory lining used by Keller for lining the shafts and lateral canal, consists of burnt dolomite (magnesia) and tar. In starting the furnace, the charge is introduced between the carbon blocks of the base and the ends of the electrodes. The current passes from one electrode, through the material to be reduced, to the carbon electrode, E, in the base of the furnace. From this it passes to the other base electrode by the external copper conductor, and through the charge in the second shaft in the reverse direction to that just described. When the combined electric arc and resistance heating has caused portions of the charge to be reduced to the molten state and metallic iron to be formed, this collects on the hearth of each shaft and finally flows into the lateral canal, C, as shown in Fig. 3. The electric current will now pass from A to B partly by the external conductor and partly by the molten metal in the lateral canal, and as this canal fills up the proportion of the total current carried by the external conductor diminishes. The electrodes are gradually raised as the charge in the shafts is reduced and melts, and fresh raw materials are charged into the vertical shaft. The external conductor between the two base electrodes enables the furnace to be worked continuously, and any temporary block or stoppage in the lateral canal due to cooling is overcome by the use of a supplementary electrode as shown in Fig. 3 at G.

The vertical electrodes of this furnace are each formed of four carbons of square cross section, the composite electrode thus produced being 850 millimeters (34 inches) square, and 1.4 metres (56 inches) in length. The amount of electrode carbon consumed per charge is small, owing to the low electromotive force (30 volts) employed in working the furnace. In fifteen days two electrodes had lost only 400 millimeters (16 inches) of their original length, and M. Keller estimates that the electrodes in these furnaces will last twenty days before requiring renewal.

The cost of their manufacture is estimated from these figures to be 3.85 francs (73 cents) per ton of iron produced.

Two sets of experiments were carried out by the Canadian commissioners with this furnace, gray, white and mottled pig iron being produced, the influence of carbon added to the charge of ore, upon the consumption of electrical energy, being also determined. The use of charcoal in place of coke was also tried, but this experiment failed.

The ore used in these trials of the Keller furnace was only roughly crushed and mixed with the coke and lime, the jaws of the crusher being set to two inches. In the first run of the furnace 15,943 kilograms (35,154 pounds) of ore were charged and 9,868 kilograms (21,758 pounds) of pig were produced in 55 hours—while in the second run, lasting 48 hours, 13,310 kilograms (29,348 pounds) of ore were used, and 6,692 kilograms (14,756 pounds) of pig iron were produced.

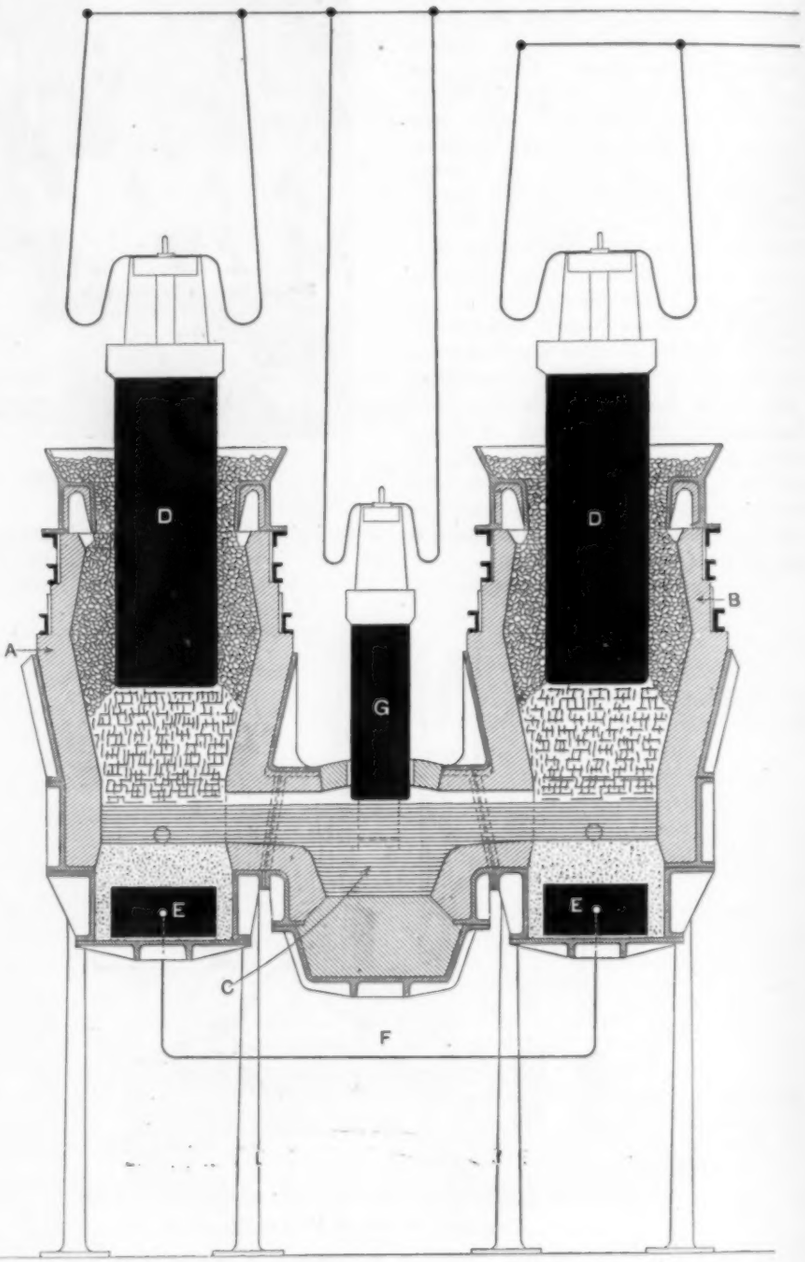


FIG. 3.—SECTIONAL ELEVATION OF KELLER FURNACE.

The energy used per ton of pig iron in these trials was 0.475 electrical horsepower-year and 0.226 electrical horsepower-year, respectively, the lower figure being obtained with the

smaller furnace of 309 horsepower capacity.

Basing the estimate of cost on the mean of these two figures 0.350 electrical horsepower-year, the commissioners calculated that pig could be produced in the Keller furnace at a total cost (exclusive of royalty) of $12.05 per ton.

Since these trials by the Canadian commissioners at Livet, M. Keller has continued his experiments with the 1,000-horsepower furnace, and has satisfied himself that the electro-thermic process gives him complete control of the silicon and carbon contents of the pig iron produced, and that the metal is equal to that obtained in the blast furnace from the same ore. It is also claimed for the electro-thermic method of production in the Keller furnace that the percentage of silicon and carbon can be varied at will.

A 2,000-horsepower furnace for the production of 20 tons of gray iron castings per 24 hours is now in course of erection at Livet.

It is probable that this furnace will be constructed on the four-hearth type, shown in cross section in Fig. 4. In this type of furnace four shafts connect with a central canal. The tapping of the slag and metal occurs from this central chamber; while the escaping gases are also employed to heat the descending charge. Fig. 6 shows a still larger scheme for a Keller furnace plant producing 100 tons of pig iron per 24 hours, but this project is on paper only, and has not been worked out upon a practical scale. A water power, producing 12,000 horsepower, would be required to provide the necessary electric current for this scheme—and five four-hearth furnaces would be installed.

Although many hundreds of tons of iron have been produced at Kerrousse and at Livet, the Keller iron ore reduction furnace has not been adopted by any outside firm so far as the writer is aware, and for this reason it must still be considered in the experimental stage of its development. M. Keller himself recognizes that if adopted it will be in countries possessing iron ores in abundance, but lack of coal with which to smelt them—Chili, Brazil and New Zealand being named in this respect.

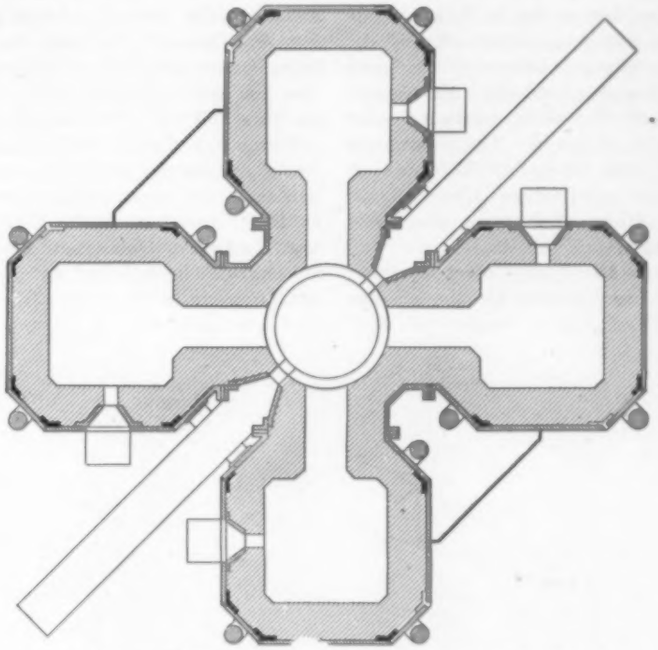


FIG. 4.—CROSS SECTION OF NEW KELLER FURNACE.

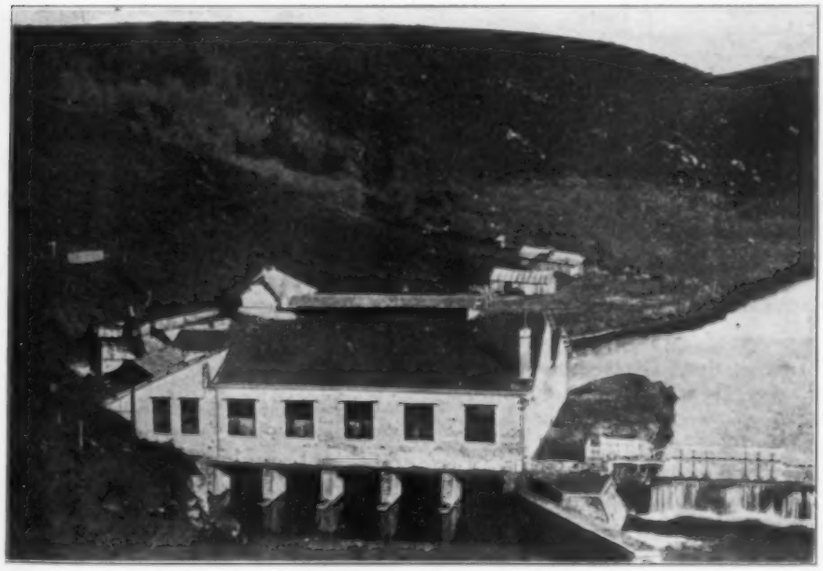


FIG. 5.—THE KELLER, LELEUX & CIE. WORKS AT KERROUSSE.

The Keller Steel Refining Furnace.

The Keller steel refining furnace is shown in sectional elevation at B on Fig. 1. In the later designs of the Keller iron producing plant, the refining furnace has not undergone much modification. As shown in Fig. 1, it consists of a fixed chamber lined with refractory basic material, and heated by two massive carbon electrodes suspended vertically above the metal in the furnace. In principle and design this refining furnace has little to distinguish it from the Heroult refining furnace. In the Keller furnace, however, the electrodes are not allowed to dip beneath the slag, but only to touch the same. This method of leading the current into and away from the molten slag and metal beneath it, involves the use of a higher electromotive force, and therefore of a larger expenditure of electrical energy per ton of metal refined, but as compensation for this, it is claimed there is less danger of the produced steel being contaminated with the impurities of the electrodes, while the consumption of the carbons is reduced, owing to these being little exposed to the oxidizing properties of the slag.

In a later modification this furnace is provided with tilting mechanism and the slag is poured off, exactly as in the Heroult type of refining furnace. A further resemblance to the Heroult procedure is the use of the slag for washing out the impurities of the iron,

and the addition of two or more charges of slagging materials, before the refining operation is completed.

A trial run with this furnace was made at Livet by the Canadian commissioners, but owing to lack of time only one slag was poured off, and the run was stopped before the refining operation was completed. No conclusions could, therefore, be based upon the results obtained. The furnace in principle and operation is, however, so similar to that of Heroult that separate trials of it were practically unnecessary.

Although the Keller plant at Livet has been used chiefly for the production of pig iron and castings and not to any great extent for that of steel, a Keller electric refining plant has been installed recently at the works of Messrs. Holtzer & Co., Unieux, France. This refining furnace weighs about 50 tons, rests on a steel cradle, and can be tilted for discharging purposes. A 1,500-horsepower, steam-driven generating set will supply the necessary electric energy, and the iron to be refined in this furnace will be run into it, in the molten condition, from a Siemens-Martin furnace.

A current of 20,000 amperes at 60 volts will be employed, and it is expected that an output of three or four charges of eight tons each, per day of 24 hours, will be obtained.

This is the first trial of the electric steel refining furnace in an up-to-date steel works in France, and the future of electric refining will depend very largely upon the success or otherwise of the installation at Unieux.

This use of molten iron from the Siemens-Martin furnace, as charging material for the electric refining furnace, is a step that was advised by the writer some years ago—and it is surprising that its practical application has been so long delayed. The electric furnace will most probably first be adopted, as an accessory appliance in the modern iron and steel works—and there is little doubt in the writer's mind that the trial at Unieux will be successful and will be followed by similar installations in other works, where steel for high-class tools and motor-car work is an important branch of manufacture.

Fig. 5 is a general view of the Kerrousse works.

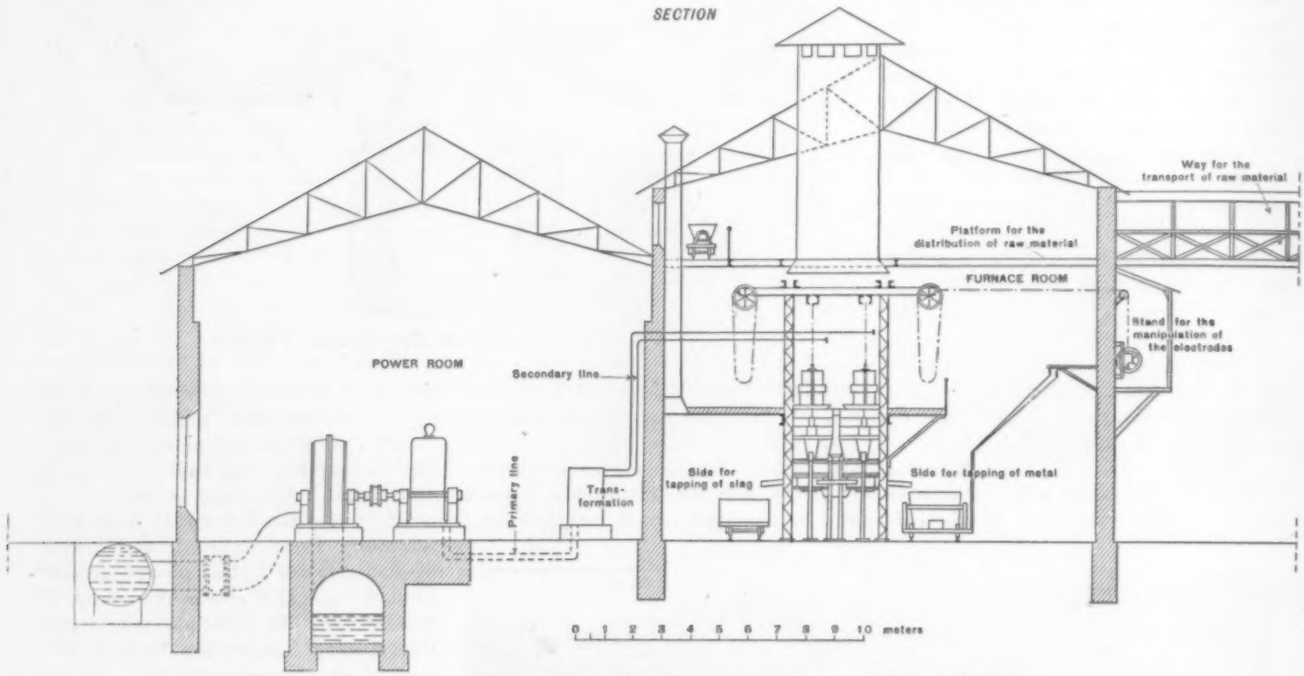

SECTION
Way for the transport of raw material
Platform for the distribution of raw material
FURNACE ROOM
Stand for the manipulation of the electrodes
POWER ROOM
Secondary line
Primary line
Trans-formation
Side for tapping of slag
Side for tapping of metal
0 1 2 3 4 5 6 7 8 9 10 meters

FIG. 6.—PRELIMINARY PROJECT FOR THE INSTALLATION OF AN ELECTRO-THERMIC PLANT. CAPACITY, 100 TONS OF PIG IRON PER 24 HOURS.

Immigration Conference.—In view of the pronounced labor shortage about the mines, mills and furnaces of Georgia and Alabama, iron and steel manufacturers will be particularly interested in the southern immigration conference, called for Nashville, Tenn., Nov. 13-15. The governors of all the southern states will be invited, delegates at large will be appointed and commercial bodies and railways will be generally represented. Methods will be considered for securing immigrants of the desirable class, and indications are that the meeting will be largely attended

THE MORTON MEMORIAL LABORATORY OF CHEMISTRY OF STEVENS INSTITUTE OF TECHNOLOGY.[1]

BY F. J. POND.[2]

The Morton Memorial Laboratory of Chemistry at the Stevens Institute of Technology, Hoboken, N. J., erected by the alumni as a memorial to the late president, Dr. Henry Morton, was first used by the students during the latter half of the scholastic year.

The laboratory is very conveniently situated with respect to the other institute buildings. It is located on the northeast corner of River and Sixth streets, and has a frontage of about 52 feet on River street and 118 feet on Sixth street. The building is without a basement and consists of three stories, the attic above the third floor remaining in the rough and being utilized for storage, as a space for ventilating pipes, and for installing a small fan for ventilating the hoods in the lecture room.

The entrance from River street leads to a lobby about 31 feet wide, from which a corridor eight feet wide extends through the building to the rear doors. On the right of the corridor are a toilet room, oil and gas-analysis room, coat room, janitor's room, assay room with its smaller balance room, electro-chemical laboratory, and main

[1]The *Stevens Institute Indicator.*
[2]Assistant Professor of Engineering Chemistry, Stevens Institute of Technology.

stock room, the latter being conveniently placed near to the rear doors for receipt of chemicals and apparatus. On the left of the corridor are the professor's office, his private laboratory and balance room, assistant professor's private laboratory, and machinery or fan room. From the lobby at the front of the building a stairway leads to the second or main laboratory floor; beneath the stairway and extending a few feet below the first floor level is a large fireproof vault. The stairway leads to a lobby on the second floor from which the large analytical laboratory, designed for both qualitative and quantitative analysis, is entered; this laboratory with its combustion or ignition room, hydrogen sulphide room, supply room, and balance room on a mezzanine floor occupies the entire second floor. A stairway leads from the lobby on the second floor to a corridor on the third floor, which extends to the lecture room in the northeasterly end of the building. On the right of the corridor are a toilet room, office, library, and lecture preparation room; the last-named room is connected with the second floor supply room and the first floor stock room by a lift, and with the lecture room. The large lecture room with its preparation room occupies all of the easterly end of this floor.

The building with its fixtures was planned by a committee from the institute faculty with Prof. D. S. Jacobus as its chairman, and the plans were finally carried out by Messrs. Ackerman & Partridge, architects, of New York. The building was erected between March, 1905, and February, 1906, at a cost of about $150,000.

The exterior walls are built of red, hard-burned bricks with raked joints, upon a granite base; the trimmings are of limestone, and the steps leading to the building are of granite. The structure throughout is of fireproof construction, the building materials being steel, brick and cement, with stone trimmings; the interior walls and partitions are laid with buff-colored brick, with a base three courses high of red pressed brick. The floors throughout the building have a re-enforced cement base; in the laboratories and preparation room the floors are of asphalt, while the lecture room, recitation room, library, balance rooms, and offices have floors of maple. All ceilings except those of the memorial, lecture, and recitation rooms are of cement.

The heating and ventilating system was designed and installed by Mr. A. R. Wolff and will be described later. The heating is effected by steam radiators placed in the various rooms, the steam being supplied from the boiler house of the Carnegie laboratory of engineering, which furnishes steam for all of the institute buildings. The results so far obtained in this laboratory seem to demonstrate very conclusively that the system of ventilation used is vastly superior to any other which has been put into practical application in a large laboratory with classes of ninety to one hundred students. All pipes for gas, steam, water, and drainage, as well as the large tile pipes for conducting the waste gases from the hoods, are suspended from the ceilings, and every joint and length of pipe is perfectly accessible so that any leak may be readily detected and repaired. Distilled water is conducted to the rooms in which it is needed by tin-lined iron pipes. The faucets have self-closing cocks, and are silver plated in all parts where contamination might take place. All working tables, shelves, and cabinets rest on a coved cement base two and a half inches high, to prevent liquids from flowing under them.

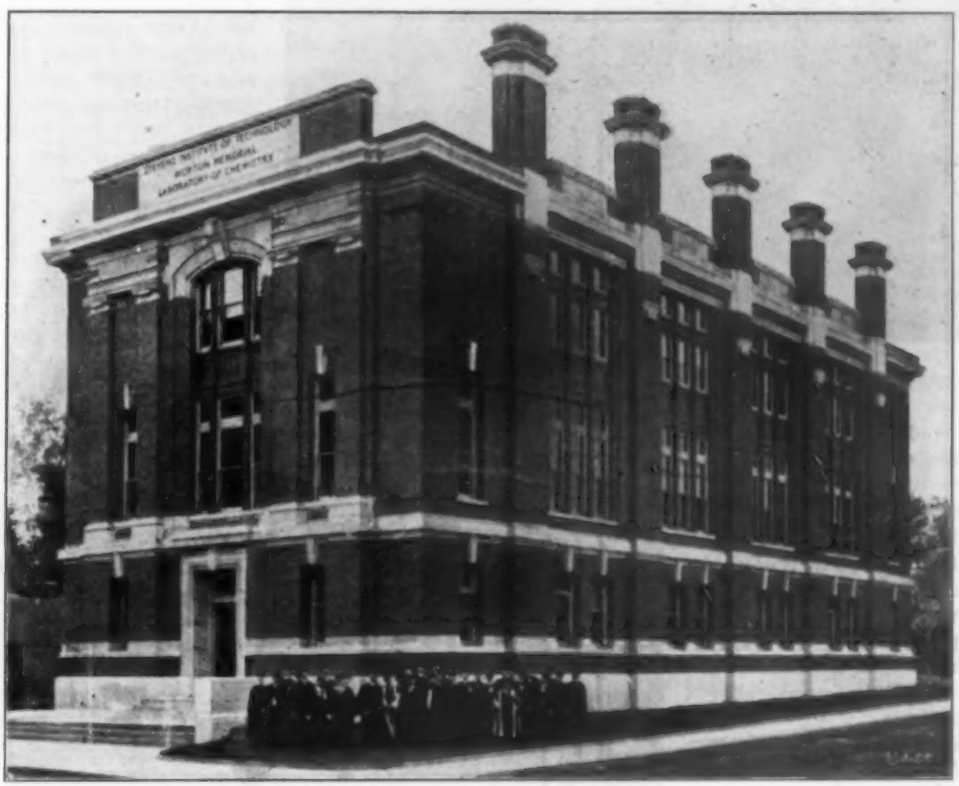


FIG. 1.—THE MORTON MEMORIAL LABORATORY OF CHEMISTRY, STEVENS INSTITUTE OF TECHNOLOGY.

Before giving a detailed description of the various rooms in the building, a few words of explanation should be added regarding the course in chemistry at the Stevens Institute of Technology. The institute provides a broad course in engineering, and the chemistry included in this course is such as to

meet the requirements of the educated engineer; consequently, many rooms, such as an organic chemistry laboratory, a physiological chemistry room, an agricultural chemistry room, etc., which are essential parts of many college laboratories of chemistry, would be superfluous here. Chemistry is studied by all students during the first three years. The classroom work consists of a course of lectures and recitations on general chemistry, followed by a course of lectures and recitations on the chemistry of the materials of engineering, and the metallurgy of iron and steel. The laboratory work commences with qualitative analysis and is continued with a course in quantitative analysis. The Morton memorial laboratory of chemistry was therefore planned to afford the best accommodations possible for students in the chemical subjects as above outlined, and no space has been given for rooms which would be of little or no value for the regular scheduled work.

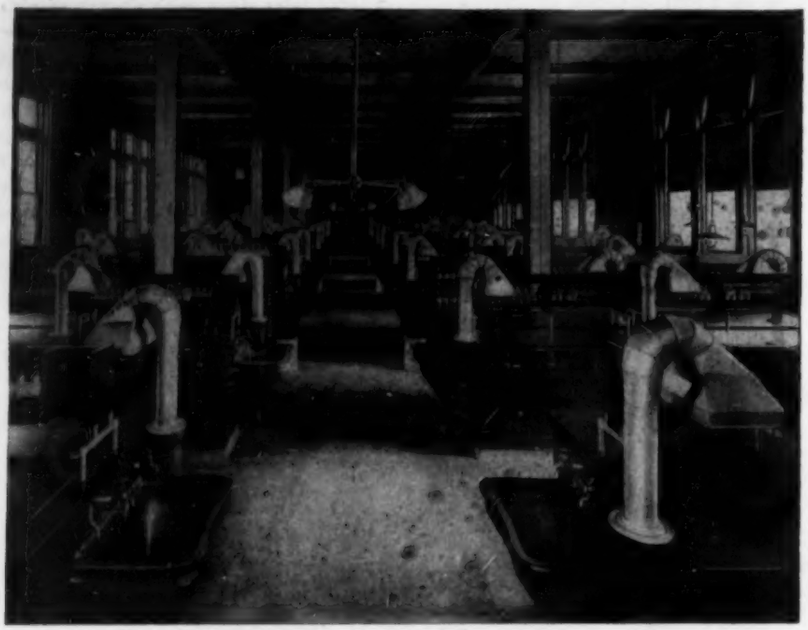


FIG. 2.—VIEW OF MAIN LABORATORY, LOOKING TOWARD BALANCE ROOM.

Laboratory for Qualitative and Quantitative Analysis.

This large laboratory, which with its supply room, combustion room, and hydrogen sulphide precipitation room occupies the entire second floor, is 91 by 48 feet. It is entered directly from the second floor lobby.

The laboratory is furnished with sixteen double working tables, six cases of general reagent shelves and closets, seven sets of wall shelves, and six groups of drying ovens with fixed tables beneath them. The sixteen working tables and six cases of general reagent shelves are arranged symmetrically in two rows on the north and south sides of the room; a center aisle, six feet wide, extends from the entrance to the supply room door. The tables are arranged in groups of two with a working space between each table; one case of general reagent shelves is placed between each group of tables, allowing a passageway between the shelves and the students working at the tables.

FIG. 3.—VIEW OF MAIN LABORATORY, LOOKING FROM BALANCE ROOM.

The tops of the tables are of 1½-inch Alberene stone, and are fitted with stone troughs, seven inches wide by three inches deep, running along the longitudinal axis of the tables; these troughs project over each end and discharge into large earthenware sinks. All the table tops and troughs are coated annually with linseed oil. On each side of the tables are twelve closets, placed below two rows of twelve drawers each. Each table affords accommodation for six students working at the same time, the entire laboratory, therefore, accommodating ninety-six students at a time. The laboratory will accommodate a total of 384 students. Above the trough and extending the entire length of the table are two shelves for reagent bottles. Above the center of the trough and attached to the under side of the lower reagent shelf is a water pipe with three outlets, one for two opposite working spaces; these water fixtures serve for washing test-tubes, flushing the troughs, and for filter pumps. Each working space is also provided with a draining-board for beakers, flasks, etc. Gas is supplied through pipes running along the front of the table and just under the overhanging edge of the table top; openings are cut in the stone top for the fixtures, and the controlling cocks are so arranged that nothing projects beyond the edge of the table. This arrangement permits the use of a wider working space, since the control of the gas and the attachment of the burners is accomplished without interfering with apparatus on the table, and with-

out inconvenient reaching. Each place is provided with two gas attachments. At either end of the tables is a large earthenware sink, to which water is supplied by two faucets. Four sinks on the center aisle are furnished with self-closing faucets for distilled water.

Each working space is provided with a down-draft hood, of goose-neck pattern; the rectangular opening of the hoods is 10 inches by 12 inches, and is 17 inches above the table top. They are constructed of sheet iron, painted on the outside with aluminum paint and on the interior with pitch; a screen across the inside of the opening prevents papers, etc., from being taken down into the pipes. Their height is such that any ordinary flask or beaker may be heated on a tripod placed under the opening. All work in which fumes are generated is performed under the hoods, and since the exhaust is very strong and every student is supplied with a hood, there are no fumes in the laboratory atmosphere at any time.

The drying ovens for precipitates, are placed on the side walls. They are divided into six groups of sixteen ovens each. They are made of galvanized iron painted on the outside, and are closed with hinged doors which may be locked by padlocks, and are heated by steam pipes.

FIG. 5.—WORKING TABLE SHOWING INDIVIDUAL HOODS.

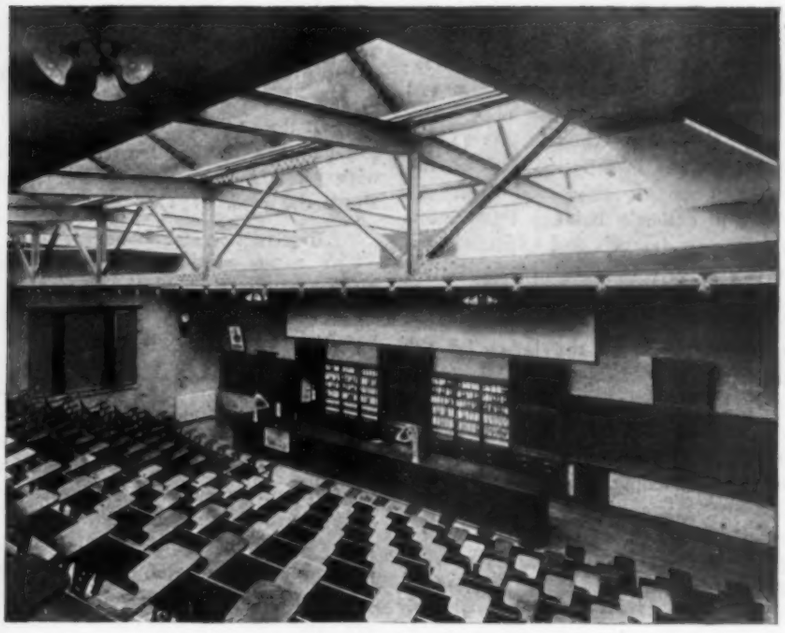


FIG. 4.—LECTURE ROOM.

Combustion Room.

The combustion room opens directly from the northwest corner of the laboratory, and is 16 by 12 feet six inches. It is furnished with three wall tables having Alberene stone tops, which extend along three sides of the room. The tables are supplied with thirteen gas and thirteen compressed-air attachments, the fixtures being arranged along the front as in the laboratory. It is equipped with blast lamps, combustion-furnaces, etc., and is used especially for all blast-lamp work in the ignition of precipitates.

Hydrogen Sulphide Room.

This room opens directly from the northeast corner of the laboratory, at the opposite end of the side aisle from the combustion room. It is 21 by nine feet, and is well lighted. All work requiring the use of hydrogen sulphide gas is performed in this room, the gas being produced by two large generators in one corner of the room. Two lead pipes convey the gas to the two series of hoods, in which the precipitation work is carried on. These hoods are sixteen in number, and are arranged in two rows of eight each along the sides of the room. Each hood is furnished with two gas fixtures placed on the rear wall, and is closed with a vertical sliding glass door. The ventilation of the hoods is accomplished by a vertical exhaust pipe let into the center of the hood floor and flush with the latter; this pipe is connected with the exhaust receiving chamber. The ventilation of the room leaves little to be desired, as there is practically no odor of hydrogen sulphide.

Balance Room.

This room is on a mezzanine floor above the laboratory supply and hydrogen sulphide rooms; it is 48 feet by nine feet, and is connected with the laboratory by two stairways. Two balance tables are placed along the sides of the room in front of the windows; one is 36 feet and the other 40 feet long, and both are one foot six inches wide. Twenty analytical balances are in use at present, but there is space for five or six more.

The stairway from the second to the third floor leads directly to the third floor corridor. This corridor is 44 feet long by seven feet nine inches wide. The various rooms on this floor open directly into the corridor.

Lecture Room.

This large lecture room serves for all lectures in general and engineering chemistry. It is 53 feet in width, 40 feet from front to back.

It was necessary to give especial attention to the problem of providing an abundance of light for such a large room. This problem was very satisfactorily solved by providing a sawtooth construction of the roof above the lecture room, in which three skylights are placed. In addition to these skylights, the room has three east windows and six north windows. The seats have fixed writing tablets, and are placed on a stepped floor, the rise in the steps being carefully calculated so that every student has a splendid view of the entire lecture table; seats are arranged for 198 individuals. There are no columns in the room, the roof above being supported by trusses. The seats are arranged in nine rows of twenty-two each, the radius of curvature of the rows being 81 feet.

The lecture table faces the north, and is 28 feet long and two feet eight inches wide. A rectangular piece of 1½-inch Alberene stone, three feet long by two feet wide, is placed flush with the table top, on which combustion furnaces may be placed. Near the other end of the table is a pneumatic trough, with a glass front and disappearing cover. The table is furnished with fittings for the supply of gas, water and compressed air, which are controlled from the lecturer's side.

In the wall back of the table and extending into the room are three hoods. The two end hoods have vertical sliding glass windows at the rear, which open into the preparation room; all hoods have gas and water fixtures with waste pipe and electric connections. The hoods are ventilated by upward draft connected with the exhauster on the floor above; the individual hoods on the lecture table are also connected with this exhauster.

Preparation Room.

This room, which is 57 feet six inches by seven feet nine inches, adjoins the lecture room and communicates with it by a door and by two hoods; it also opens into the corridor. It is connected with the stock room and the laboratory supply room by a lift, and with the attic above by a stairway. The room is furnished with an Alberene stone sink, which has one faucet each for city and distilled water, and a draining board. It contains an oak-topped table, which has four gas fixtures attached to the wall back of the table. This room is used in the preparation of apparatus, etc., for experimental lectures, and at present it also serves as a museum of industrial chemical products.

Library.

This room is 20 feet three inches long by seven feet nine inches wide and 14 feet high, and opens from the corridor, opposite the Morton memorial room, has a maple floor with cement base. The room is furnished with an oak-topped table, which extends the entire length of the room in front of the windows. The purpose of the room is to contain only such books and journals as are immediately needed for consultation by the students in their laboratory work, the large chemical library being in the main institute building.

First Floor.

All the rooms on the first floor are 12 feet six inches in height, and the walls are lined with buff-colored bricks, with a base three courses high of red pressed bricks. The doors communicating with the corridor are glazed and are also provided with transoms, except those entering the toilet room and the dark room which are furnished with double louvers.

Professor's Office and Laboratory.

Upon entering the building, the first room on the left is the professor's office; it is 13 feet by 16 feet. The room is directly connected with the professor's private laboratory adjoining, and a single door leads into the lobby. The professor's private laboratory is 22 feet by 19 feet, and is supplied with all the conveniences for chemical work.

The professor's balance room connects the professor's and assistant professor's private laboratories; it is nine feet six inches by 10 feet nine inches. It does not open into the corridor, being separated from the latter by the photographic dark room.

Photographic Darkroom.

This room is 14 feet by eight feet, and is divided by a wooden partition into two equal parts; each part has an Alberene stone sink supplied with a loose wooden cover and two water faucets, and a table, four feet five inches by two feet six inches. The room may be lighted by electricity or gas, and is ventilated by two natural-draft registers, and by double louvers in the corridor door.

Machinery and Fan Room.

This room is in the northeast end of the first floor, and is 34 feet by 19 feet. Fresh air is admitted through an air inlet, six feet by four feet, in the north wall of the building; when desired this opening may be closed with copper shutters. The air passes from the inlet to the filtering chamber, which contains a number of wooden frames covered with cheese-cloth reenforced by wire netting; the frames are arranged on edge in double rows. After passing through the cloth filters, the air circulates through coils of steam pipes, which heat the air to the required temperature during the cold seasons. It is then drawn into a Sturtevant blower, and is forced through rectangular galvanized iron flues. Branches from these flues distribute the air to registers near the ceilings in the various rooms throughout the building. A large Sturtevant exhauster, connected with a sixteen-horsepower C. and C. motor, furnishes the exhaust for the laboratory and hydrogen sulphide hoods. The vitiated air and fumes from chemicals are drawn into the hoods, and pass into vertical earthenware pipes, which lead into horizontal concrete ducts placed under the center of the working tables. The exhaust mains open into a receiving chamber lined with brick, coated with pitch to prevent disintegration by the acid vapors; this receiving chamber, five feet six inches by four feet, and 12 feet high, is in the fan room, and may be entered through an air-tight door, lined with sheet lead. An opening near the bottom of this chamber connects with the exhaust fan, allowing the foul air and vapors to pass out. The discharge of the fan is connected by means of a lead duct with the brick exhaust flue, three feet by four feet in section. The flue is coated interiorly with pitch, and extends a few inches above the roof.

Electrochemical Laboratory.

This room, adjoining the stock room on the south side of the corridor, is 10 feet by 19 feet; it is lighted by one window, and communicates with the corridor by one single door with transom. It contains: One wall table, 14 feet by two feet, fitted with three gas fixtures, and one center table, six feet by two feet, both tables have tops of Alberene stone, are built on brick supports, and are free from vibration; one case, four feet six inches by one foot nine inches, and eight feet nine inches high, containing closets, drawers, and adjustable shelves, which are protected from dust by swinging glass doors; one Alberene stone sink with one water faucet.

This room will be equipped with all the usual apparatus required for its special line of work.

Assay Laboratory.

This room is 10 feet 10 inches by 19 feet. It adjoins the electro-chemical laboratory on the south side of the corridor, and is entered from the cor-

ridor through one single door with transom. It is lighted from the south by one window, and has one corridor window.

The furnishings of this room, consist of the following: One double scorification and cupel gas furnace, No. 11, made by the American Gas Furnace Co.; one crucible and one melting gas furnace of the same make as the scorification furnace; one Alberene stone sink with two faucets; one table with Alberene stone top, eight feet six inches by two feet six inches.

A balance room, nine feet six inches by eight feet, opens directly from this laboratory. The table for the balances has an oak top, is nine feet six inches long by one foot six inches wide. The balance room also contains one case, four feet four inches by one foot eight inches, and eight feet two inches high.

The assaying laboratory is equipped with the usual apparatus, such as Blake rock crushers, machines for fine grinding, pulp balances, cupel machines, etc.

Coal, Gas, and Oil Analysis Room.

This room is 11 feet by 19 feet, and contains three wall tables with Alberene stone tops, placed along the two sides and south end of the room; these tables are two feet six inches wide. One foot above the table tops and attached to the walls are two eight-inch reagent shelves. Gas, water, and compressed-air pipes are carried on the walls above the tables, and furnish gas, water, and air attachments; waste-water pipes are also provided. In addition there are the requisite cases and shelves, and one Alberene stone sink with two water faucets.

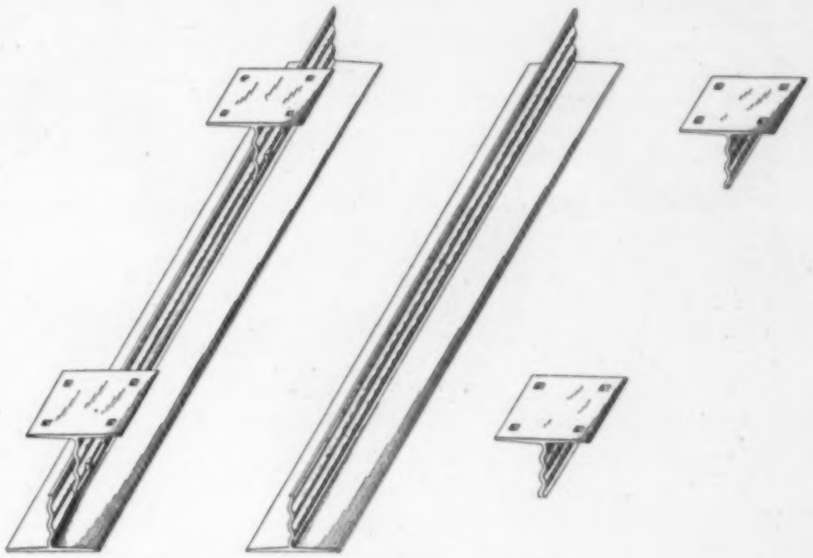
The room is equipped with the various forms of gas and oil analysis apparatus, and is designed to accommodate relatively small groups of students in these special lines of work.

Ore Discoveries in Peru.—Exploratory work recently conducted by the Peruvian government in the districts of Aija and Calleycancha, between fifty and one hundred miles inland, has resulted in the discovery of considerable deposits of iron ore running from 42 to over 70 per cent iron, with about 1.75 per cent of phosphorus and no sulphur. The ore of the former district is not possible of development by reason of a heavy overtopping of hard rock and also of its inaccessibility, as about sixty miles of railroad through extremely broken country would be necessary to reach it. In the Calleycancha district the situation is more promising. The ore is rich in iron, exists in large quantities, the deposits are of good depth and coal fields are not far distant. A railroad is in operation to a point near by.

A NEW STEEL TIE.

Metallic railway ties, as heretofore constructed, have been comparatively stiff and rigid, and the breaking of rails has often been held to have been caused by this rigidity. In order to overcome this objection, the ties should yield slightly under the load.

A tie designed to present this feature of yielding has been invented by Preston T. Large, of North Tonawanda, N. Y., and is illustrated in the accompanying engraving. The body of the tie is constructed from a bar in the shape of an inverted T in cross section and comprises a horizontal base with a vertical web projecting upward from the central part of the base. The web is corrugated, the corrugations extending horizontally throughout the length of the tie. The web yields slightly under the pressure caused by a train passing over the rails supported by the tie. This property is due to the longitudinal corrugations of the web which convert it into a spring more or less resilient in a vertical direction but rigid in a horizontal one.



Steel Tie With Corrugated Web.

The yield of the tie under pressure is sufficient to cushion the blow to which it is subjected by the train passing over it, but the resilience of the corrugations causes the tie to be restored to its normal condition after the load has passed. By thus enabling the ties to yield, the rails are prevented from breaking and the ties from being crushed or battered, thereby maintaining the roadbed in a state of high efficiency. The rails are attached to the tie by means of tie-plates also in the shape of a T, the rail bearing surface being eight by eight inches. The corrugations on the co-operating parts of the tie-plate and web of the tie fit into each other and are fastened by means of bolts or rivets. The interlocking portions of the web and tie-plate form a number of co-operating shoulders which absorb the vertical strain of the load on the tie and prevent the shearing off of the connecting bolts or rivets. The tie plates are made from the crop ends derived from the ties in the process of manufacture.

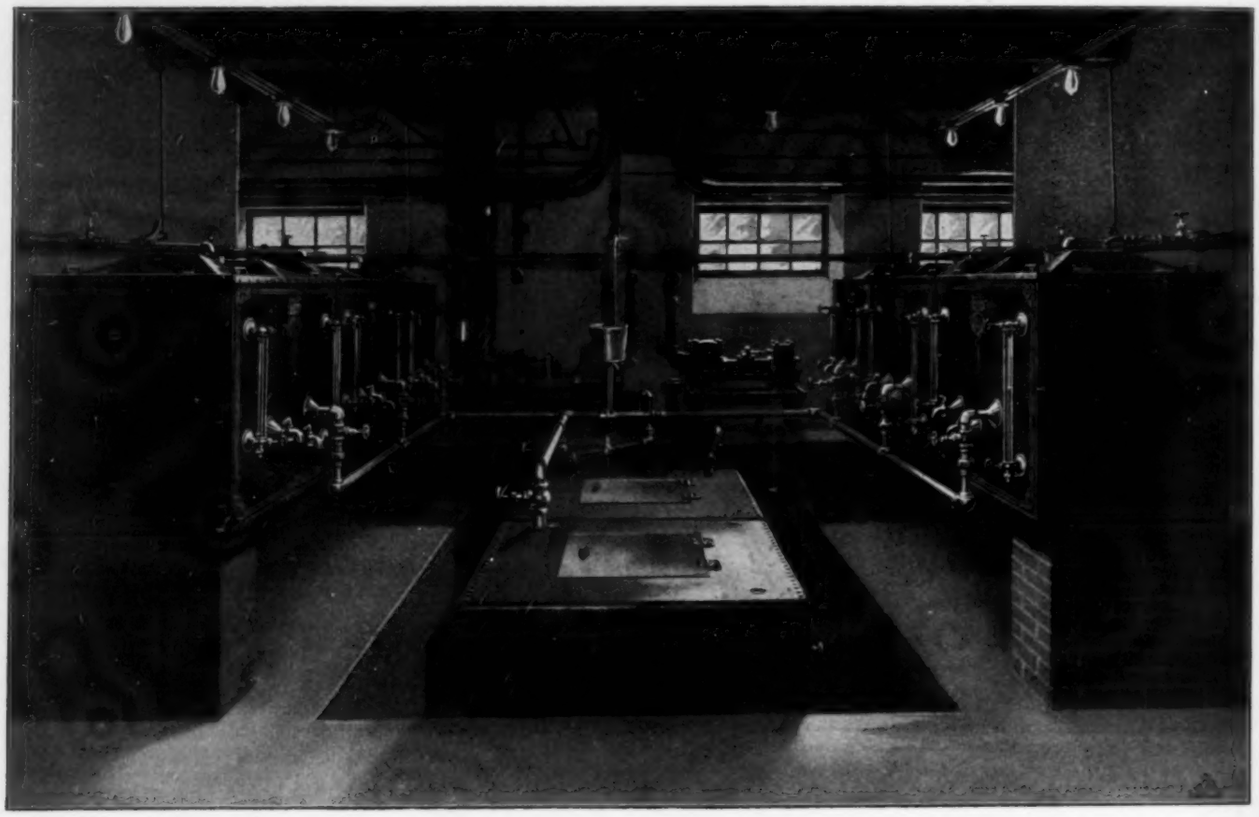
By lapping the webs of the tie and tie-plate to a greater or less extent, the aggregate height of the tie or rail may be varied to suit the different uses of the tie. When in use on an ordinary roadbed, the tie may be imbedded to its greatest extent in the ballast, thus securing the greatest stability and protection of the tie from the weather. The base of the tie is eight inches wide, the vertical web is 3/8 inch thick before corrugation and the base tapers from 3/8 inch at the center to 3-16 inch at the edge.

The profit and loss account of the British Westinghouse Electric & Mfg. Co. for the year ending July 31, 1905, shows net profits of £113,239 after deducting expenses of management, bad debts, maintenance and depreciation charges and other working charges. Interest and other deductions total £131,627, leaving a deficit for the year of £18,217.

The Bureau of Yards and Docks at the navy department is preparing plans for the construction of the largest dry dock in the world. It will be constructed at the Bremerton navy yard, Puget Sound, Wash., $1,250,000 having been appropriated for this purpose.

A LARGE OIL FILTERING SYSTEM.

The Burt Mfg. Co., Akron, O., has recently installed in the 13th and Mt. Vernon streets power house of the Philadelphia Rapid Transit Co., a large oil filtering plant on the American "unit" system. This system was described in considerable detail in THE IRON TRADE REVIEW of Sept. 7, 1905, and consists of a series of filter units which can be piped together and operated as a single filter, thus permitting the extension of the filter system as the plant which it serves increases in size. The system installed for the Philadelphia Rapid Transit Co. is shown in the accompanying illustration and comprises six American "unit" filter. The rated capacity of these six units is 1,350 gallons for 24 hours. They, however, are cleaning perfectly nearly 2,000 gallons per 24 hours which shows the heavy overload capacity of the system.



OIL FILTERING PLANT IN THIRTEENTH AND MT. VERNON STREETS POWER HOUSE OF PHILADELPHIA RAPID TRANSIT CO.

The partnership between Chas. Neidhart, Jr. and Louis Steinfirst, under the firm name of Keystone Iron & Metal Co., of McKees Rocks, Pa., has been dissolved by mutual consent and Louis Steinfirst has retired from the firm and sold all his rights in it to Mr. Neidhart, who will continue the business under the old name. Mr. Steinfirst will go into the scrap business for himself.

FORTY THOUSAND HORSEPOWER IN HYDRAULIC TURBINES FOR DULUTH.

The plans for the Great Northern Power Co., of Duluth, Minn., for the development of water power in the northwest are only second in scope to those so successfully carried out at Niagara; and when they are brought to full completion will provide for the transmission of 200,000 horsepower to an ever widening circle of users. The power plant which is now under construction will have an initial equipment for the generation of 40,000 horsepower, with an ultimate capacity in this one station of 80,000 horsepower. It is located three miles from the city limits of Duluth, on the St. Louis river, the distance for transmission to the distributing center being 14 miles, to the cities of Duluth and Superior, where substation equipment will be provided. From the strategic position of two generating stations the future possibilities of the development may readily be surmised. The Mesabi and Vermillion iron ranges lie from fifty to seventy-five miles to the northward of the plant and are destined eventually to be operated from it. Along the southern shore of the lake to the westward and within transmission distance are the Gogebic Crystal Falls and Gogebic iron ranges and the copper mines of the Calumet district. The railway and lighting interests of Duluth and Superior have already contracted for electricity from the new source, and the long harbor frontage of docks and warehouses offers great opportunities for the use of electric hoists, lamps, etc.

The distance from the head gates to the power house is 2.8 miles, about two miles of which is canal and forebay. Over the remaining distance the water is carried through about 3,800 feet of wood stave pipe and about 1,000 feet of seven-foot steel pipe for each water wheel unit. The difference in elevation between forebay and power house is 378 feet. The building, which for the present will be 181.5 feet long and 77 feet wide, will be constructed of brick masonry with steel framing. The initial hydraulic apparatus consists of three turbine water wheel units, each designed for a capacity of 13,000 horsepower. They will operate at a speed of 375 revolutions per minute from a fall of 389 feet. The wheels are furnished by the Allis-Chalmers Co., and are of the single vertical Francis type. The exciter outfit will comprise two single vertical impulse exciter wheels, each one developing 250 horsepower at 500 revolutions per minute from a 336-foot head. The general scheme of the Great Northern development was originated by T. A. Cokefair, of Duluth, and was executed by the National Contracting Co. under Mr. Cokefair's direction.

THE GREAT FAYAL MINE.

The Fayal mine at Eveleth with its four shafts and adjoining open pits covers probably the greatest area of any mine on the ranges. It stretches over nineteen forties in sections 2 and 3 of 57-17 as might be imagined from its yearly production which has attained a maximum of 1,919,172 tons in 1902, and last year was 1,358,922 tons. The greatest depth of shaft is 278 feet, the mine having the characteristic shallowness of the Mesabi properties and at present most of the mining if not in quantity of ore taken out at least in number of men working, is being done underground. There are some 650 men employed at the Fayal and the schedule of production calls for the mining of about the same quantity of ore as last year. Capt. R. R. Trezona, brother of Capt. Chas. Trezona of the Vermillion range, is general superindendent of the Fayal and Gilbert at Eveleth and has with him as superintendent George H. Dormer.

The four shafts are located approximately at the corners of a square with No. 1 and 2 on the north side diagonally opposite No. 4 and 3 respectively. The present No. 1 shaft has been sunk to the southward of the old No. 1, which being in ore had to be replaced, and like the No. 4 shaft is now down in rock. No. 3 shaft is now idle and is being used for lowering lumber into the No. 4 workings. The No. 3 drifts extend over toward the No. 4 shaft, but at the height of one sub above the No. 4 workings. A raise has been built from No. 4 to connect the two and as the operations from No. 4 shaft have carried the drifts over to the No. 3 shaft though below the level to which that shaft has been sunk, the No. 3 shaft was the most convenient inlet for material. However, a new and deeper shaft is being sunk near No. 4 which will soon be ready for the lowering of timber. Around the boundaries of the ore deposit on one side a slanting wall of taconite crowds out the ore and rock hems in the ore on the opposite side. The stratification is very irregular and in some portions considerably broken. The taconite formation inclines from north to south, but in many places at the edge of the deposit owing to the irregular formation the drifts end in ore enclosed on three sides. The ore body has a depth of about 220 feet and has been pillared out in the No. 4 workings only toward the outer ends of the drifts, from which parts the ore is first sliced out, the last slice and what is left in the back being removed as the miners move inward to the center, the timber being blasted down as the ore is removed.

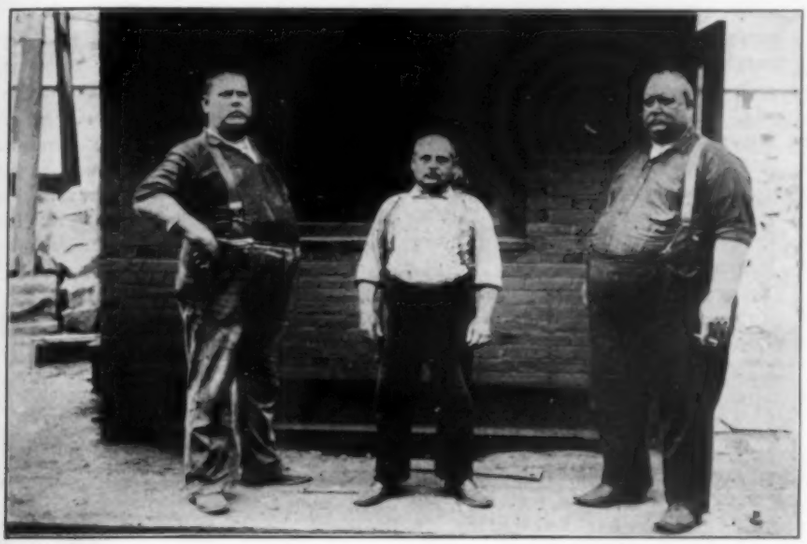
The power plant at No. 4 shaft is the best equipped, being the last erected. The main hoisting engines are twin 18 x 42 Allis-Corliss of about 250 horsepower each. The hoisting drum is six feet in diameter and is driven directly from the common crank shaft of the engines. Current for the electric lighting with which the mine is equipped, is supplied by a General Electric, direct current generator, generating 450 amperes at 250 volts pressure. It is direct driven by a 14 x 30 Corliss engine built by the Minneapolis Steel & Machinery Co. for which steam at 130 pounds pressure is furnished by a battery of three 120-horsepower boilers built by the Northwestern Steam Boiler & Mfg. Co.

Above ground the work is progressing somewhat irregularly and at present the pits look in rather bad shape. The old milling pit on the west side of the property has been worked out and the present dump from No. 3 pit is moving in that direction, the cave above the underground workings between the shafts having been nearly filled in. In No. 3 pit there is one shovel working in ore though not continuously, as it is in the second grade of ore. No. 3 extension pit which was opened up from the south end about a year ago, is being stripped at the north end by two shovels, one on either side. This pit is long and narrow and runs north and south on the east side of No. 3 underground workings, but the over burden is being taken off in a semicircle at the north end, making it much wider. One shovel is also stripping off between No. 3 and the extension, it being the intention to convert the two into one long pit.

Ore is being shipped from the extension pit where one shovel is at work making a cut down through the center toward the north end. With the pit in its present size and condition of stripping, no more shovels could be handled in it and the opening up of the adjoining pits into each other should result in their much more advantageous working.

The Gilbert mine about three miles south of the Fayal has not been opened at all as yet and probably will not be this fall. Just now cross-sections of the ore body are being plotted from the drilling that has not been altogether finished. Whether it will be entirely a steam shovel proposition, underground, or both has not been determined.

THE MEN BEHIND THE STEEL.



320 lbs. 200 lbs. 442 lbs.

THREE HEAVYWEIGHT ROLLERS IN THE EMPLOY OF THE CAMBRIA STEEL CO.

NEW CHICAGO HOME FOR STEEL CONCERNS.

The Commercial National Bank building, northeast corner Clark and Adams streets, Chicago, Ill., which will be one of the finest office structures in that city, will be completed May 1, 1907, and will give office space to some of the wealthiest corporations in America. The United States Steel Corporation , with its various subsidiary organizations, will occupy four and a half floors in the building. The Illinois Steel Co. will occupy the fourteenth and fifteenth floors, the American Steel Foundries Co., the sixteenth floor; the American Steel & Wire Co., the thirteenth and one-third of the twelfth; the American Bridge Co., two-thirds of the twelfth; the American Sheet & Tin Plate Co., and the National Tube Co., the seventh; while space will be provided also for the Carnegie Steel Co., the Indiana Steel Co., the Shelby Steel Tube Co., and the E., J. & E. Ry. Co., the Standard Oil Co. will occupy one and two-third floors.

NEW FURNACES

With Annual Capacity of Over Two And a Half Million Tons Building.

The American Iron and Steel Association reports 21 furnaces building Aug. 1, of which 19 will use coke for fuel, one will use anthracite and coke mixed, and one experimental furnace will use charcoal; total estimated annual capacity, 2,662,000 tons of pig iron, of which 2,642,000 tons are coke and 20,000 tons are anthracite and coke. The product of the nine furnaces which will be completed before Jan. 1, 1907, will probably be about 250,000 tons this year.

Of the 21 furnaces one coke furnace, with an annual capacity of 120,000 tons, will probably blow in in August; three coke furnaces, with an annual capacity of 455,000 tons, in September; one anthracite and coke furnace, with an annual capacity of 20,000 tons, in October; three coke furnaces, with an annual capacity of 300,000 tons, in November; and one coke furnace with an annual capacity of 80,000 tons, in December. Total, nine furnaces, with an annual capacity of 975,000 tons. The remaining 11 coke furnaces, with an annual capacity of 1,687,000 tons, will probably be ready for blast in the winter, spring, and summer of 1907. In this enumeration the experimental charcoal furnace in Pennsylvania has not been considered.

The following is the list of furnaces now building:

Bethlehem Furnace, (E,) Bethlehem Steel Co., South Bethlehem, Pa. One coke stack, to be 90 by 22; construction commenced December 9, 1905; ore, Cuban; product, basic and foundry pig iron; estimated annual capacity, 144,000 tons. Date of completion uncertain.

Palmerton Furnace No. 2, The New Jersey Zinc Co., (of Pennsylvania), New York. Furnace at Palmerton, Pa. One anthracite and coke stack, to be 70 by 14; construction commenced Oct. 16, 1905; product, spiegeleisen from zinc residuum; estimated annual capacity, 20,000 tons. Will probably be ready for blast in October, 1906.

Lebanon Reduction Co., Lebanon, Pa. One small charcoal stack; furnace will be used for experimental purposes only; pig iron will not be made for sale. Will probably be ready for blast in the fall of 1906.

Carrie Furnaces Nos. 6 and 7, Carnegie Steel Co., Pittsburg. Furnaces at Rankin. Two coke stacks, each to be 85 by 22; construction commenced Jan. 30, 1906; ore, Mesabi and Old Range; product, basic pig iron; estimated annual capacity, 438,000 tons. No. 6 will probably be ready for blast in April, 1907, and No. 7 in May.

Midland Furnace No. 2, Midland Steel Co., Pittsburg. Furnace at Midland, Pa. One coke stack, to be 85 by 21; construction commenced Sept. 20, 1905; ore, Lake Superior; product, foundry and basic pig iron; estimated annual capacity; 150,000 tons. Work upon furnace No. 1 has not been commenced down to Aug. 1, 1906. Will probably be ready for blast in Sept., 1906.

Perry Furnace No. 1, Perry Iron Co., Penn Building, Erie, Pa. One coke stack, to be 75 by 17; construction commenced July 25, 1906; ore, Lake Superior; product, foundry and malleable pig iron; estimated annual capacity, 100,000 tons. Will probably be ready for blast in June, 1907.

Josephine Furnace, Josephine Furnace & Coke Co., Josephine, Indiana county, Pa. One coke stack, to be 80 by 20; construction commenced April 1, 1906; ore, Lake Superior; product, Bessemer, foundry, and basic pig iron; estimated annual capacity, 140,000 tons. Will probably be ready for blast in January, 1907.

Ensley Furnace No. 5, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala. Furnace at Ensley, Ala. One coke stack to be 86 7-12 by 20¾; construction commenced Sept. 20, 1906; ores, red and brown from the company's mines; product, basic pig iron; estimated annual capacity, 120,000 tons. This furnace will take the place of the former Ensley No. 5, which was dismantled in 1905. Will probably be ready for blast in August, 1906.

Etowah Furnace No. 1, Alabama Consolidated Coal & Iron Co., Birmingham. Furnace at Gadsden, Ala. One coke stack, to be 75 by 17½; construction commenced in July, 1905; ores, red and brown from the company's mines; product, foundry pig iron; estimated annual capacity, 65,000 tons. Will probably be ready for blast in November, 1906.

Haselton Furnaces No. 2 and 3, Republic Iron & Steel Co., Pittsburg. Furnaces at Haselton, Ohio. Two coke stacks, each to be 85 by 19; construction commenced on No. 2 in June and on No. 3 on Nov. 19, 1905; ore, Lake Superior; product, Bessemer pig iron; estimated annual capacity, 280,000 tons. No. 2 will probably be ready for blast in September, 1906, and No. 3 in January, 1907.

Toledo Furnace Co., Western Reserve Building, Cleveland. Furnace at Toledo. One coke stack, to be 80 by 20; construction commenced March 1, 1906; ore, Lake Superior; product, foundry and malleable pig iron; estimated annual capacity, 135,000 tons. Will probably be ready for blast in November, 1906.

Indiana Steel Co., Gary, Ind. Four coke stacks, each to be 88 by 21½; construction commenced July 15, 1906; ore, chiefly Lake Superior; product, basic pig iron; estimated annual capacity, 600,000 tons. Time of completion uncertain.

Joliet Works, Furnace No. 4, Illinois Steel Co., Rookery Building Chicago. Furnace at Joliet. One coke stack, to be 90 by 22; construction commenced Jan. 27, 1906; ore, Lake Superior; product, Bessemer pig iron; estimated annual capacity, 165,000 tons. Will probably be ready for blast in September, 1906.

Federal Furnace Co., Rookery Building, Chicago. Furnace at South Chicago. One coke stack, to be 75 by 18½; construction commenced Oct. 2, 1905; ore, Lake Superior; product, malleable Bessemer and foundry pig iron; estimated annual capacity, 100,000 tons. Will probably be ready for blast in November, 1906.

Mayville Furnace, (B,) The Northwestern Iron Co., Milwaukee, Wis. Furnace at Mayville. One coke stack, to be 77 by 17; construction commenced Oct. 1, 1905; ores, Lake Superior and local from near Iron Ridge; product, foundry pig iron; estimated annual capacity, 80,000 tons. Will probably be ready for blast in December, 1906.

Minnequa Furnace, (F,) Colorado Fuel & Iron Co., Denver. Furnace at Pueblo, Colorado. One coke stack, to be 85 by 20; construction commenced in 1902; ores, from the company's mines; product, Bessemer, foundry, Scotch, and mill pig iron, and spiegeleisen; estimated annual capacity, 125,000 tons. Date of completion uncertain.

A BUSY YEAR FOR THE ALLIANCE MACHINE CO.

The Alliance Machine Co., Alliance, O., has recently increased the facilities of its works by extending its main building 80 feet, the building now being 380 x 120 feet. It is expected that this will take care of the company's needs for the present year, but next spring, it proposes to duplicate the present plant.

This addition has been due to the great number of heavy cranes recently sold. So far this year the company has received orders for 150 electric cranes. In this list are a number of the largest

cranes ever placed in the United States, in their respective lines. Among the special cranes recorded, the ladle crane takes first place, the following having been sold: The Bethlehem Steel Co., three 100 and two 60-ton cranes; the Phoenix Iron Works, two 100-ton; the Worth Bros. Co., one 75-ton; the Illinois Steel Co., one 60-ton; the Colorado Fuel & Iron Co., one 75-ton; the Indiana Steel Co., six 125-ton and four 75-ton; the Follansbee Bros. Co., one 45-ton; the Dominion Iron & Steel Co., two 40-ton; Tennessee Coal, Iron & Railroad Co., two 100-ton and two 45-ton. All the above were the new patented type, four girder, ladle cranes.

In addition to these, the company had previously built a number of these cranes bringing the entire list of this new style ladle crane up to 33 since April, 1905. This type of crane bids fair to supersede the old style with outside chain.

Other special machines which the company has built or has orders for are as follows: A 200-ton electric stripper for the Carnegie Steel Co., of Homestead; three 200-ton electric strippers for the Indiana Steel Co.; one 320-ton electro-hydraulic stripper for the Pennsylvania Steel Co.; two soaking pit cranes for the Bethlehem Steel Co.; two soaking pit cranes for the Worth Bros. Co., and three soaking pit cranes for the Indiana Steel Co. Charging and drawing machines have been built for the Portsmouth Steel Co., the Carnegie Steel Co., Duquesne Works, the Eastern Steel Co., Worth Bros. Co., and the Follansbee Bros. Co.

Orders for standard cranes have been received from a large number of concerns, including the Worth Bros. Co., the Cambria Steel Co., the Bethlehem Steel Co., the Illinois Steel Co., the Pennsylvania Steel Co., the Eastern Steel Co., the New York State Steel Co., the Indiana Steel Co., the Pittsburg Steel Co., the Carnegie Steel Co., the Inland Steel Co., the Lorain Steel Co., the Portsmouth Steel Co., the Firth Sterling Steel Co., the Central Iron & Steel Co., the Standard Steel Works, the Sharon Steel Hoop Co., the National Tube Co., R. D. Wood & Co., the Tennessee Coal, Iron & Railroad Co., the Wheeling Mold & Foundry Co., the Pittsburg Plate Glass Co., the Rust Boiler Co., the Pennsylvania Boiler Works, the American Locomotive Works and the Union Iron Works.

The Alliance Machine Co. claims that this extraordinary record has been obtained by building a strong, substantial machine accessible in all its details with every modern improvement. The plant has been in operation four years, and in that time almost 600 cranes have been sold.

ALL STEEL CARS FOR THE PENNSYLVANIA RAILROAD.

"All future passenger equipment of the Pennsylvania railroad will be made of steel. The necessity of providing non-collapsible, absolutely fire-proof passenger cars for the New York tunnel has simply hastened the day when this transformation must take place. The car of the future must be as safe as engineering science can make it."

Such was the declaration authorized by a high official in the motive-power department of the Pennsylvania railroad. It followed examination of reports which have been made on the cost and performance of the new Pennsylvania coach, No. 1651, the first all-steel passenger car to be built in the world. This car has been placed temporarily on one of the company's regular local runs, and most minute reports are being made as to its work.

The future passenger equipment is to be of steel, therefore, not only steel frame and box, but steel and non-combustible material in every particular. This will involve a very large expenditure of money, but the management feels that no expense should be spared to remove the danger from fire and collision in future railroading.

The decision now definitely reached will call for about 1,000 unburnable railroad company cars to be ready when the New York tunnel is completed. It will also call for some 500 Pullman cars which must also be of completely non-combustible construction. At the request of the Pennsylvania railroad, the Pullman Co. is now building the first all-steel sleeper ever constructed.

Other so-called steel coaches have been built—notably for the New York subway—but they have been only partly of steel. The first car to be built anywhere wherein the main object has been to secure the elimination of every particle of combustible material is No. 1651, the reports on which are just now in shape to make it possible to base definite future action upon them. The new car weighs 103,550 pounds against 84,900 for the standard wooden coach, but it is found that the added weight very greatly reduces the vibration and adds to the comfort of the passengers. No inconsiderable part of the additional weight is due to the great burden involved in carrying storage batteries and battery boxes. All the new cars are to be lighted by electricity, and the Pennsylvania will carry no gas illuminated cars of any kind into its New York tunnel.

PROGRESS OF SAN FRANCISCO.

The California Promotion Committee made out the following bulletin of progress:

There was a loss of 335,000 of the city's population during the first month after the fire, and it is estimated that more than 200,000 have returned while 50,000 are waiting in nearby cities for accommodations in order that they may return. The present population is estimated at 365,000.

The number of people receiving relief in the city has been reduced from 225,000 during the first week, to less than 17,000.

Hotel accommodations are now satisfactory, and are fast being placed in condition to care for all who may come.

Dealers in all lines note a demand for high class articles. Those who stocked with cheap goods, especially in the line of clothing, have been disappointed and are hurrying orders for better goods.

Seven theaters are playing to good houses every evening. Others are in course of erection.

Labor supply shows but little improvement. There is great demand for ordinary laborers, and in all departments of the building trades.

In the state, conditions indicate one of the most prosperous years in the history of California. Banks report good business. Crops are exceptionally good, especially grain. Labor is in demand at good wages for harvesting grain and fruit.

Reports from mining districts indicate a greater output of mineral wealth than for several years past.

The following summary shows conditions in San Francisco:

July building permits issued, 470. Value $3,514,000.

Real estate transfers, 610.

Building contracts recorded, 132. Value $1,282,506.

Bank clearings, $160,631,793.87 Increase over July of 1905, 8¾ per cent.

Tonnage of the port of San Francisco, 63,489.

Class A buildings being rehabilitated, 35.

Class A buildings occupied, 18.

Permanent buildings under construction, 66.

Temporary buildings under construction, 4,500.

Firms doing business in burned district 6,000.

Number of men doing construction work, 25,000.

Average number of cars of debris removed daily, 100.

Steel Common Proves Market Leader.

The stimulating effect of the "Harriman coup" in instilling life into a comparatively quiet market, made itself felt throughout the entire week to such an extent that total transactions reached the unusual figure of 10,536,400 shares. The trading on Monday alone aggregated 2,894,400 shares, of which 1,622,000 shares changed hands in two hours, setting a new record for the New York exchange. While the character of dealing was highly professional, there was ample evidence that the general public, which had been holding aloof to a great extent since the San Francisco disaster, was back in the market to share in the profits of the steady advance before the crest should be reached. United States steel common was the most heavily dealt in stock on the exchanges, total transactions for the week being 1,374,500 shares. On this heavy trading the price rose steadily, reaching 47¾, the highest mark since 1902, and closing the week at 47⅝, a net gain of 2½ points. This advance came in the complete absence of any news development directly affecting the iron or steel industry. The closing of the Hill ore deal, in the lack of a market feature, was again rumored without attracting any general attention and other reports, while prosperous, did not differ from the ordinary run of several weeks past. Union Pacific was the only other security to sell past the million-share mark. Among the industrials Colorado Fuel was extremely active, selling 225,000 shares and netting a good advance. The money market played an important part in the week's transactions. On Wednesday the rate for call loans ran up to seven per cent, the highest for several months, and time loan rates were advanced. The demands of the coming crop movement proved a subject of wide speculation, with the general belief that little embarrassment would be occasioned, as gold importations of good size are expected.

Financial Notes:—

The Republic Iron & Steel Co. has declared the regular quarterly dividend of 1¾ per cent on preferred stock, with an extra dividend of 2 per cent to apply on deferred dividends. Both are payable Oct. 1, after which the company will be but six per cent behind on its preferred stock.

The Railway Steel Spring Co. has declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable Sept. 20.

It is announced that the full 5 per cent interest on the income bonds of the Lake Superior corporation will be paid in October.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quotation Aug 18.	Closing Quo. Aug. 25	Changes	Date of 1906 Ann. Meet.	Par Value	Capital Outstanding	Dividend Basis	Dividend Being Paid	Dividend Date Last Div. Pay.
Allis-Chalmers Co	18	20	+2	Sept.	100	19,820,000		.....	.....
Allis-Chalmers preferred	48½	49	+ ½		100	16,150,000	7 cum	.....	Feb., 1904
American Can	7⅞	7½	− ⅜	Apr. 24	100	41,233,300		.....	.....
American Can preferred	59½	61	+1½		100	41,233,300	7 cum	5 Q.	July, 1906
American Car and Foundry	41¼	41½	+ ¼	June 28	100	30,000,000		.....	May, 1905
AmericanCar and Foundry preferred	101	100¾	− ¼		100	30,000,000	7 n. c.	7 Q.	July, 1906
American Locomotive	70¼	71	+ ¾	Oct. 16	100	25,000,000		1¾	July, 1906
American Locomotive preferred	113	113	.....		100	24,100,000	7 cum	7 Q.	July, 1906
American Shipbuilding	64½	62¼	−2¾	Oct. 2	100	7,600,000	4 n. c.	1 Q.	Aug. 1906
American Shipbuilding preferred	107	107	.....		100	7,900,000	7 n. c.	1¾ Q.	Aug. 1906
American Steel Foundries	10¾	11⅜	− ⅜	Oct. 3	100	17,700,000		.....	
American Steel Foundries preferred	45½	45½	.....		100	17,700,000	6 cum	.....	Aug.,1905
Barney & Smith	70¾	71	+ ¼	June 5	100	1,000,000	4	4	Sept.,1906
Barney & Smith preferred	140	140	.....		100	2,500,000	8 cum	8 Q.	Sept.,1906
Bethlehem Steel	22	26¼	+4¼	April 3	100	15,000,000		.....	
Bethlehem Steel preferred	85	85	.....		100	15,000,000	7 n. c.	7 Q.	Aug ,1906
Bullock Electric preferred	112	112	.....	Oct. 2	100	1,000,000	6	6 Q.	July, 1906
Cambria Steel	35¼	36¼	+1	March 20	50	45,000,000	6	3 Q.	Aug., 1906
Cambria Iron	49	49	.....		50	8,468,000	4	4 S. A.	Apr.,1906
Colorado Fuel & Iron	57⅜	58¾	+1⅜	Oct. 15	100	30,132,000	7	.....	Apr.,1902
Wm. Cramp & Sons Ship & Eng. Bldg. Co.	15	16	+1	May 31	100	6,098,000	5	.....	Nov.,1902
Crucible Steel	12⅞	13⅝	+ ¾	Oct. 17	100	25,000,000		.....	
Crucible Steel preferred	80	80⅝	+ ⅝		100	25,000,000	7 cum	.....	June,1906
Empire Steel	4	7	+3	Feb. 28	100	2,281,400		.....	
Empire Steel preferred	35	38	+3		100	2,500,000	6 cum	3 S. A.	July, 1906
Fay & Egan	95	95	.....	Feb. 20	100	1,000,000	6	6 Q.	May, 1906
Fay & Egan preferred	128½	128½	.....		100	1,000,000	7 cum	7 Q.	May, 1906
General Electric	170⅜	169	−1⅜	May 8	100	48,256,050	8	8 Q.	July, 1906
International Pump	52½	50	−2½	June 5	100	12,262,500		2	July, 1905
International Pump preferred	86	86	.....		100	8,850,000	6 cum	6 Q.	Aug., 1906
Lackawanna Steel	71	72	+1	March 14	100	34,971,400		.....	
Lake Superior Corporation	17½	17	− ½	Oct. 3	100	40,000,000		.....	
Niles-Bement-Pond	130	130	.....	Feb. 7	100	5,000,000	6	6 Q.	Sept, 1906
Niles-Bement-Pond preferred	105	105	.....		100	2,000,000	6 cum	6 Q.	Aug., 1906
Otis Elevator Co	50	54	+4	March 19	100	6,350,300		2 A.	Apr., 1906
Otis Elevator Co. preferred	98	98	.....		100	5,589,500	6 n. c.	6 Q.	July, 1906
Pittsburg Coal Co	15	14¾	− ¼	Feb. 12	100	30,135,000		.....	
Pittsburg Coal preferred	54¾	56⅞	+2⅛		100	30,716,200	7	.....	Apr., 1905
Pressed Steel Car	54½	53¼	− ¾	Feb. 21	100	12,500,000		3	Aug., 1904
Pressed Steel Car preferred	98½	98½	.....		100	12,500,000	7 n. c.	7 Q.	Aug., 1906
Pullman Palace Car	239¾	237	−2¾	Oct. 18	100	74,000,000		8 Q.	Aug., 1906
Railway Steel Spring	54¾	55	+ ¾	March 1	100	13,500,000		4 S. A.	Oct., 1905
Railway Steel Spring preferred	100¼	100¼	.....		100	13,500,000	7 cum	7 Q.	Sept., 1906
Republic Iron & Steel	30¾	31	+ ¾	Oct. 17	100	27,352,000		.....	
Republic Iron & Steel preferred	101	101	.....		100	20,852,000	7 cum	7 Q.	Oct., 1906
Sloss-Sheffield	78	79¾	+1¾	March 14	100	7,500,000	5	5	Jan., 1906
Sloss-Sheffield preferred	106	106	.....		100	6,700,000	7 n. c.	7 Q.	July, 1906
Tennessee Coal & Iron	160	160	.....	May 15	100	22,552,800		4 Q.	Aug., 1906
U. S. Cast Iron Pipe & Foundry	46¾	48¼	+ 1½	June 27	100	12,500,000		2	Sept.,1906
U. S. Cast Iron Pipe & Foundry preferred	90¼	91¼	1		100	12,500,000	7 n. c.	7	Sept.,1906
U. S. Steel	45⅛	47½	+ 2½	April 16	100	508,302,500	2 n. c.	½ Q.	Oct., 1906
U. S. Steel preferred	108	108¼	+ ¼		100	360,281,100	7 cum	7 Q.	Aug , 1906
U. S. Steel 5's	98½	98⅛	− ⅜		100	463,798,000	5	5 A.	
Virginia Iron, Coal & Coke	45⅛	43½	−2	Sept. 18	100	8,641,600		.....	
Westinghouse Electric	155	150	−5	June 27	50	20,986,350	10	10 Q.	July. 1906
Westinghouse Air Brake	146	146¼	+1¼	Oct. 2	50	10,990,450	20	20 Q.	July, 1906

NEWS FROM MANY INDUSTRIES.

New Buyers:—

The Gilbert Nut-Lock Co., Birmingham, Ala., has been incorporated with a capitalization of $50,000. The following officers have been chosen: J. W. Gilbert of Lovick, Ala., president and treasurer; T. F. Johnson of Woodlawn, vice president; J. M. Caldwell of Birmingham, secretary; P. I. Fitzgerald of Atlanta, Louis Gelders of Birmingham, Charles Johnson of Woodlawn and R. A. Gilbert of Birmingham, additional directors.

The Woods Engineering Co., Akron, O., has been formed with F. C. Woods as president and general manager, W. C. Brown as chief engineer and F. A. Hobbs as superintendent. The two last named have been connected with the Alliance Machine Co. Contracts have been let for the erection of a small shop and machine building and repairing will be done.

The Southern Steel Works, Chattanooga, Tenn., has increased its capitalization from $20,000 to $60,000. Extensive improvements are planned.

The Lovejoy Tool Works, Chicago, have been incorporated for $35,000 by Thomas H. Lovejoy and others.

The Lake Erie Nail & Supply Co., Cleveland, O., has increased its capital stock from $15,000 to $50,000.

The Kankakee Foundry Co., Kankakee, Ill., has been incorporated with a capitalization of $75,000 by Thomas G., M. F., and P. V. Gartland.

The Stanford Range Co., Sheffield, Ala., capitalization $20,000, has been organized to manufacture stoves, furnaces and ranges. The incorporators are William R. K. Stanford, E. B. Wright, C. T. Robinson and R. H. Wilhoyte, all citizens of Sheffield. William R. K. Stanford is president; C. T. Robinson, vice president, and E. B. Wright, secretary and treasurer. A steel foundry will be operated.

The Western Iron Works, Ltd., Winnipeg, Man., is to increase its capitalization from $35,000 to $100,000.

The Ideal Foundry Co., Grand Rapids, Mich., has been organized by Charles H. Glaser, T. A. Weiland, James Vidro and John Tennis, all of that city. The new company is completing a foundry building.

The Love Brake Shoe Co., Chicago, has been incorporated with a capital stock of $100,000 by Jay Love of Aurora, Ill., and Charles Armbrust and Sydney Stein of Chicago.

The Tehawus Iron Ore Co., Port Henry, N. Y., has been incorporated with a capital stock of $50,000 to carry on mining operations. The incorporators are: Edward T. Stokes and Dallas A. Rich, Port Henry; and Charles S. Foote, No. 32 Liberty street, New York.

The Arthur C. Harvey Co., Boston, Mass., iron, steel, and other metals, has been incorporated with a capital stock of $200,000. The officers of the company are: President and treasurer, Arthur C. Harvey, No. 374 Congress street, Boston; and clerk, Charles W. Henderson, of the same address.

Acme Ball Bearing Sales Co., Chappaqua, N. Y. has been incorporated to manufacture and deal in hardware and machinery. The capital stock is $10,000 and the incorporators are: George B. McKay, No. 16 Nassau street, N. Y.; Ezra Rust, Saginaw, Mich.; and Charles C. Sturtz, No. 327 Central Park West, New York.

New Construction:—

The Perry-Fay Mfg. Co., Elyria, O., has completed its plant and is in full operation. The company manufactures machine screws and is preparing to handle all sizes of screw machine products up to 3½ inches diameter. Its equipment comprises machines of the Cleveland automatic and other types. The main building is 52 x 200 feet, two stories high with an L 40 x 100 feet. The plant has a case hardening, annealing and polishing department. The company expects to double its present capacity by January, 1907. Its officers are: R. D. Perry, president; E. F. Allen, vice president, and W. W. Fay, secretary-treasurer.

The Hayden-Corbett Chain Co., Columbus, Ohio, is constructing a brick addition to its present plant, 300 x 50 feet, to be equipped with newly designed machinery for the manufacture of high-grade chain. The company expects to have this completed and in operation by Oct. 1, and will then have added to its present large capacity about 300 tons of finished chain per month.

A committee of the Huntington, W. Va., board of trade has practically completed its canvass for the $4,000 necessary to secure the plant of the Globe Foundry Co., which will occupy a site facing the Ohio river. The buildings are to be of brick and concrete, and be completed in ninety days. Their dimensions are as follows: molding room, 93 x 303; machine shop, 50 x 160; core room, 40 x 62; mill room, 64 x 60; cupola building, 50 x 40; sand and coke bins, 160 x 20; storage sheds, 240 x 50. The buildings are to cost about $75,000, and the company will manufacture iron drain pipe, heaters and all kinds of castings. It has been located at Port Chester, N. Y.

The Southside Foundry & Machine Works, Charleston, W. Va., has had plans prepared for a foundry building 80 x 175 feet, of brick, steel and concrete construction.

The Standard Manufacturing Co., Bridgeport, Conn., has let the contract for a three-story brick structure 32 x 91 feet, with a boiler house 19 x 24 feet, all equipped with elevators and fire-proof vaults. These improvements will triple the output of the company, which is finding a heavy demand for its automatic gear cutters and other light machinery.

The Stotts-Logsdon Signal & Equipment Co., Omaha, Neb., has bought the Sharpe Machine Works in that city, and will increase their capacity for the manufacture of railway signals.

The newly incorporated Southland Corporation of Birmingham, Ala., which has taken over the plant and business of the Bartlett-Tewksbury Machinery Co., will erect several large foundry and machine shop buildings for which considerable equipment will be needed. The company will manufacture engines, sugar mills, and will do a general foundry and machine shop business.

The American Car & Fdy. Co., St. Louis, Mo., has taken out a permit for the erection of a steel foundry building to cost $110,000.

The Cincinnati Milling Machine Co., Cincinnati, O., is soon to begin the erection of its new plant on land recently purchased from the Factory Colony Co.

The Buckeye Engine Co., Salem, O., has started work on a new blacksmith shop.

The Chattanooga Plow Co., Chattanooga, Tenn., has completed a brick addition 85 x 126 feet to its present foundry, largely increasing its melting capacity.

The W. S. Tyler Co., Cleveland, O., has let contracts for a new machine shop 72 x 170 feet, of brick construction.

The Buffalo Wire Works Co., Buf-

falo, N. Y., has prepared plans for a considerable addition to its plant.

The S. Freeman & Sons Mfg. Co., Racine, Wis., is increasing its works by the addition of a one-story structure 100 x 100 feet.

The Glamorgan Pipe & Fdy. Co., operating plants in various sections of the country, is reported as planning the erection of an extensive plant at South Norfolk, Va., on a tract of 29 acres purchased some months ago. It is stated that the works will employ 500 men.

The Cincinnati Metal Refining Co., Cincinnati, O., has leased a tract of land adjoining its present plant and will erect an addition.

H. L. Duncal, Anderson, Ind., is preparing plans for car and machine shops which the Indiana Union Traction Co. proposes to erect in that city. The main shop building will be 80 x 480 feet.

The Wheeling Steel & Iron Co., Wheeling, W. Va., has shut down its plate department while extensive repairs are being made.

The La Crosse Boiler Co., La Crosse, Wis., is increasing its plant by the erection of a brick structure 46 x 135 feet.

The Watervliet Foundry & Machine Co., Watervliet, N. Y., recently incorporated, has let the contract for a foundry building 75 x 150 feet. Heavy machine castings will be made.

The Jackson Automobile Co., Jackson, Mich., is completing the erection of a complete plant including building for making engines, a machine shop, a drop forging shop and a testing building.

Perry, Muggenstrom & Springer, of Spokane, Wash., are to erect and operate a foundry at Sandpoint, Idaho.

The Griffin Car Wheel Co., Chicago, denies the report recently circulated to the effect that it was contemplating the erection of an extensive plant in that city for the manufacture of railroad supplies.

The Carter & Hakes Machine Co., Winsted, Conn., manufacturing milling and special machinery, has let the contract for a three-story factory building sixty feet square. It will be erected on a well-located site recently purchased, and will be completed by Dec. 1.

The Malleable Iron Co., Troy, N. Y., has awarded contracts for a 50 x 200-foot addition to its present core room, the third important addition to the plant within a year.

Plans have been prepared for a $30,000 factory building to be erected at Beloit, Wis., by the Warner Instrument Co. It will be 100 x 200 feet, of reinforced concrete.

The Canadian Pacific railroad is to erect new machine shops and double the capacity of its roundhouse at Medicine Hat, Alta.

The Wisconsin Foundry Co., Milwaukee, Wis., has prepared plans for a two-story reinforced concrete structure 80 x 98 feet.

The Smith Machine Co., Milwaukee, Wis., is erecting a two-story reinforced building 100 x 260 feet.

Contracts have been closed for additions costing about $275,000 to the shop facilities of the Atchison, Topeka & Santa Fe railroad at Topeka, Kas. These will include dry kilns, a freight car planing mill, engine and boiler room, steel freight car shop, wheel shop, freight car repair sheds and other buildings. W. B. Storey Jr., chief engineer, has had charge of the preparation of plans.

The Cleveland Twist Drill Co., Cleveland, O., is adding a boiler house 56 x 104 feet to its plant.

General Industrial Notes:—

The Allegheny Ore & Iron Co. will blow in its furnace at Buena Vista, Va., about the middle of September.

Suit has been entered at New Martinsville, W. Va., to nullify the recent sale of the Ohio Valley Steel Co., Paden City, W. Va., to the Carter Iron Co., of Pittsburg. The plaintiff to the suit is William Reed, doing business under the name of the McKeesport Steel Construction Co.

The steamship Norman B. Ream, building at Chicago for the steel corporation's fleet, was launched Aug. 18, when it was christened by Mrs. R. D. Stephens, daughter of Mr. Ream.

H. J. McKeown, Cincinnati, O., manufacturing hoisting machinery, has purchased property on Butler St. in that city, where he will remove his plant after the remodeling of the present building.

The dam of the Oregon Iron & Steel Co., over the Tualatin river at Willamette, Ore., was recently dynamited and badly damaged. It has been the source of considerable friction between the company and a number of farmers up stream who claimed that their lands were often flooded by reason of the obstruction in the river.

The Schonthal Iron & Steel Co., Columbus, O., has purchased land adjoining its yard in that city.

The officers of the Zenith Furnace Co., Duluth, Wis., have been moved from the Wolvin building in the city to the plant in West Duluth.

The Dover Fire Brick Co., Cleveland, announces that it now manufactures Pennsylvania fire brick as well as fire clay brick, having purchased an interest in the Gleasonton Fire Brick Co., North Bend, Chester county, Pa., and will manufacture the North Bend brand at that plant. The Dover and Buckeye brands will still be manufactured at the Strasburg, Ohio, works. All these brands will be handled at the Pittsburg office, 1174 Frick Bldg. annex, as well as by the general office at Cleveland.

The foundry and machine shop of the Bridge City Construction Co., Logansport, Ind., after a month's idleness, have resumed operations under the management of A. C. Ross & Co., of that city.

The Enterprise Foundry & Machine Works, Bristol, Tenn., have been sold to the receiver, A. D. Reynolds, who will continue the business.

The Jackson Iron & Steel Co., Jackson, O., has elected Moses Morgan president; D. D. Davis vice president; J. G. Morgan, formerly of the Globe Iron Co., secretary and treasurer; Irvine Drew, Simon Labold and William Grice of Portsmouth, Ohio, D. D. Davis, T. J. Davis and J. F. Morgan of Oak Hill, D. E. Morgan of Cleveland, and Dan F. Morgan and Moses Morgan of Jackson, directors.

P. A. Jerguson has purchased the plant and business of the William T. Bonner Co., Boston and New York, and will continue the business. He was originally superintendent of the plant before its assignment and continued in that capacity while the plant was operated by C. A. Clark as trustee. He has had wide experience in practical marine, stationary and locomotive engineering and is an expert on the subject of mechanical appliances for warships.

The plant of the McPhail Molding Machine Co., Davenport, Ia., has been sold to Ewald Killing of that city, for $12,000, to satisfy a chattel mortgage.

Fires:—

Fire, supposed to have originated in the molding room, caused considerable damage to the foundry of John Torrance & Son, of La Crosse, Wis., Aug. 14.

Through a blow-out of accumulated gas at the Eliza furnaces of the Jones & Laughlin Steel Co. Aug. 21, three workmen were killed and several others rendered unconscious for a time.

The roof and fourth floor at the plant of the Chattanooga Stove Co., Chattanooga, Tenn., were badly damaged by fire Aug. 13, and considerable loss was sustained on other floors from water. The total damage was about $9,000. The loss has been adjusted and repairs are under way.